A majority of decisions have held that an architect does not impliedly warrant design services. [FN410] The court in Mounds View v. Walijarvi [FN411] noted:

The undertaking of an architect implies that he possesses skill and ability, including taste, sufficient to enable him to perform the required services at least ordinarily and reasonably well; and that he will exercise and apply in the given case his skill and ability, his judgment and taste, reasonably and without neglect. But the undertaking does not imply or warrant a satisfactory result. [FN412] Doctors cannot promise that every operation will be a success, just as lawyers can never be certain that every will they draft will be without defect. [FN413] Architects can never be certain that their design will interact with "natural forces as anticipated." [FN414] Architects warrant only that they will use the amount of skill and effort that their profession customarily demands in other similar cases. [FN415]

iii. Strict Liability

The application of strict liability to architectural services is occasionally considered by the courts. [FN416] The decisive question ***363** seems to be whether the home or other structure is a "product." [FN417] If the structure is the alleged product, most courts do not impose strict liability on the architect unless the building was mass-produced or prefabricated. [FN418] These courts have found that a house or other structure is not a product. [FN419] Some jurisdictions hold that a structure such as a house is a product when considering whether the defendant can be subjected to strict liability. [FN420] For example, the Arkansas Supreme Court held that "the word 'product' is as applicable to a house as to an automobile." [FN421]

Strict liability theories of recovery are generally inapplicable to persons who only render professional services. [FN422] This theory of liability was developed to protect buyers of products who are not in privity with the manufacturer. It was not developed to be used against professionals who cannot spread the economic risks among their customers. [FN423]

Architects will rarely be held strictly liable in tort in relation to the professional services they provide. However, some jurisdictions suggest that an architectural firm could be strictly liable if an "architectural design or ventilation system" was standardized or mass marketed. [FN424] Thus, if the designs are not prepared for mass production of the same structure, the architect cannot be held strictly liable due to those designs.

b. Physical Construction

The construction process has been a target for those seeking to recover alleged damages related to the presence of mold ***364** in structures. [FN425] This magnifies the importance of the contractors', subcontractors', and/or home-builders' [FN426] ability to both protect the structure components during construction and erect the facility in accordance with the applicable designs and specifications. The construction and/or placement of the building envelope and HVAC systems [FN427] will presumably be of particular importance. [FN428]

The construction professional may need to identify and avoid projects or structures that are more likely to involve material mold issues. This determination might be based on whether the project will involve equipment, materials, [FN429] or designs that tend to generate significant mold claims. [FN430] The contractor may need to consider whether the other parties are willing to address the perceived deficiencies. [FN431] If not, there may need to be a determination as to whether the benefits outweigh the risks to participate in the project.

Equally important, the contractor may find it useful to determine whether a structure slated for renovation has any pre-***365** existing mold concerns. [FN432] This may make it important to establish and document whether material mold growth or the conditions that facilitate it are present in a structure prior to an expansion or renovation. [FN433] If so, the project may either need to be avoided, or need to ensure that appropriate measures are undertaken to eliminate the problem. Similarly, the contractor may find it useful to document the absence of problematic organisms or conditions at the point the structure is completed.

A structure may be particularly vulnerable to moisture intrusion during construction. [FN434] Mold growth may be facilitated in the absence of protective measures. [FN435] Many interior building components cannot be installed until the structure is enclosed. [FN436] Otherwise, if installed prematurely, the building interior might be impacted by enough moisture to facilitate mold growth. [FN437] ***366** The failure to protect building materials or the project site prior to installation can pose similar problems. [FN438]

The protection of structure components from moisture during construction requires coordination by the contractor and subcontractors. [FN439] The objective will be the timing of the phases of the project as necessary to maximize the protection

of the portions of the structure vulnerable to moisture damage. [FN440] The conflicting goals of meeting construction milestones and prevention of water intrusion can generate tension between the owner, contractor, and subcontractors. [FN441]

Contractors will occasionally have to address mold discovered during structure renovation or remodeling. [FN442] The measures needed to remedy the problem could increase project costs and/or delay construction. [FN443] A prudent contractor will therefore consider how this issue will be handled in the construction contract.

The construction contract should allocate among the parties responsibility for incurring any necessary additional costs associated with mold. [FN444] Whether any resulting delays will be excused ***367** may also need to be addressed. This may require a clear understanding of how the discovery of mold would be addressed in various contract provisions such as the notice of differing site conditions clause. [FN445] The ability of either the owner or contractor to cover this risk during structure construction or renovation will be in part dependent upon whether the builder's risk insurance excludes mold claims. [FN446]

The discovery of mold after the construction of the structure has also generated claims against contractors. [FN447] These claims may be premised on an allegation that the mold is present because of a construction defect. The facilitating conditions often involve the alleged improper entry into or release of water in a structure. [FN448] The contractor will need to ensure that responsibility for problems related to deferred/improper maintenance or repairs are clearly placed upon the structure owner. [FN449]

Certain types of equipment and materials have been deemed responsible for supporting mold growth in some circumstances. An example is the alleged role of the HVAC equipment [FN450] in dispersing and/or facilitating mold growth. As a ***368** consequence, the universe of construction-related parties that are possible targets in mold litigation have included subcontractors, building equipment material installers, and/or suppliers.

i. Negligence

Liability has been imposed upon the general contractor or construction manager for failure to supervise construction activity. [FN451] Damages can be significant, including the cost of repairs according to the original contract, relocation costs, financing costs, and engineering and architectural fees incurred in the repairs. [FN452] The potential application of various liability theories to the contractor's work on a structure will ultimately determine under what circumstances liability for objectionable mold growth may be imposed.

The doctrine of caveat emptor has traditionally applied to the sale of homes and other structures. [FN453] Some jurisdictions would not allow the purchaser of a home to recover from the contactor or builder even if the house collapsed because of a defective foundation. [FN454] However, this doctrine has been eroded to some extent.

Recovery under a theory of negligence can arise in a variety of forms. It includes negligent construction, failure to supervise or inspect construction, and a failure to instruct subcontractors on appropriate industry and code standards. [FN455] Some decisions have held building contractors to the "general standard of reasonable care for the protection of anyone who might foreseeably be endangered by their negligence, even after acceptance of the work." [FN456] These decisions potentially extend the ***369** contractor's liability to third parties regardless of whether they are in privity. [FN457]

A number of decisions have involved allegations that contractor negligence was responsible for mold-related problems. County employees allegedly injured by mold were allowed to bring suit against the contractor that constructed the courthouse. [FN458] The action was predicated on whether the contractor had taken reasonable care to protect the plaintiff county employees. [FN459]

In Mondelli v. Kendel Homes Corp., [FN460] a contractor was held liable for negligence when he was retained to construct a house. Rainwater was found entering the basement subsequent to construction. [FN461] The structure's insulation was later found to be dripping wet and to have retained a foul odor. [FN462] The problem was mold. [FN463]

The plaintiff alleged that water leaked through the house, facilitating mold and fungi growth in the insulation. [FN464] She also claimed that the mold caused health problems, including nasal congestion, headaches, shortness of breath, and serious coughing. [FN465] A doctor suggested that the plaintiff and her family move out of their home due to these health problems.

[FN466] The plaintiff also claimed that the contractor negligently weatherproofed the exterior walls, negligently installed the flashing, and negligently applied the mortar to the bricks, all of which led to the mold growth. [FN467]

A partial basis for the imposition of liability was a finding that the contractor did not adhere to industry standards and the Uniform Building Code. [FN468] The Supreme Court of Nebraska ***370** upheld the contractor's liability on appeal. [FN469] This decision also allowed the plaintiff to pursue causes of action against the contractor despite the absence of privity. [FN470]

ii. Implied Warranty

The discovery of an alleged structural deficiency may generate a claim that the contractor impliedly warranted the work. Some jurisdictions hold that the "implied warranty of habitability and workmanlike performance is imposed by law." [FN471] An allegation that a contractor negligently constructed a building can generate an action for breach of the implied warranty of habitability and performance for the contractor's breach of the duty of care. [FN472] The argument is made that a contractor building a new home impliedly warrants that it was built in workmanlike manner and is habitable. [FN473]

It is argued that an implied warranty arises out of a contractual relationship between the contractor and the buyer. [FN474] This warranty is said to extend to any subsequent purchasers of the structure. [FN475] There are impediments to this argument however. A number of states limit by statute the time in which a home owner or subsequent owner of the home has to bring a cause of action against the contractor. [FN476]

The discovery of mold may lead the owner to assert that the contractor breached an implied warranty associated with the structure. [FN477] The assertion of such a claim may be circumscribed ***371** by the terms of the contract between the contractor and structure owner. The contractor may specifically identify and disclaim such warranties in the contract document.

iii. Strict Liability

A products liability cause of action is sometimes asserted if residential structural problems are identified. The success of such a claim may depend in part on whether or not the jurisdiction defines a home, or other structure, as a "product." [FN478] The plaintiff must often prove that the structure is "unreasonably dangerous."

The majority of courts limit the scope of this action by holding that strict liability does not apply if the damages are to the "product." [FN479] This limitation may impact some actions involving structural mold. If the mold only damaged the structure itself, as opposed to occupants, strict liability may not apply. However some jurisdictions hold that the law permits recovery under strict liability even when the only damages are to the product itself. [FN480]

VI. MANAGEMENT/ALLOCATION OF RISK/RESPONSIBILITY

A variety of risk management measures may be employed by real property market participants to address mold liabilities. [FN481] Their use will be driven by factors such as cost, availability, and the parties' leverage in a particular transaction.

***372** A. Assessment/Remediation

There are arguably negative connotations associated with structural mold. The presence of non- de minimis amounts of these organisms in a given structure may adversely affect its value. [FN482] Mold might therefore in certain instances constitute a material transactional issue. However, the likelihood that mold is present in significant quantities and the cost to address it may not always be grounded in reality. The purpose of the assessment or inspection is to attempt to quantify to some extent or to eliminate this perceived risk. [FN483] If problematic concentrations are discovered, one or more parties may determine to remediate it.

***373** 1. Assessment/Inspection

Few commercial, governmental, office, or multi-family properties are acquired or financed without being assessed to identify and/or quantify any associated environmental issues. The lender or lessor will have an interest in ensuring that the value of the mortgaged structure or leasehold respectively is maintained. The parties have therefore traditionally retained the contractual authority to initially assess the environmental conditions and perform additional assessments on a periodic basis. These due diligence activities may be undertaken at various points in a transaction. The transactional stages might include the time periods prior to acquisition/financing/construction, during a lease or loan term, or before foreclosure.

The expansion of assessment programs to address mold and the conditions that facilitate its growth pose a challenge. Mold can begin growth and propagate rapidly if the necessary conditions are present. [FN484] In other words, significant mold growth can occur between even frequent inspections or assessments. Therefore, the permanent elimination of growth conditions can be critical. [FN485]

2. Qualification/Certification Issues

The expanding interest in mold assessment and remediation will likely stimulate a concurrent demand for personnel to provide such services. Some of the companies or individuals providing mold assessment remediation services will be new to the field. [FN486] The demand for these services will be driven to a great extent by the participants in the real property transaction market. Many of these parties will be unfamiliar with mold assessment/***374** remediation issues. [FN487] They may not be in a position to judge whether the providers of such services have made prudent assessment/remediation recommendations. As a result, there is some interest in establishing competency standards for those offering such services. [FN488] However, such an undertaking requires an organization or agency [FN489] to both establish the relevant competency criteria [FN490] and manage the certification process.

The skills, education, or expertise required to address mold may vary with the type of activity. There are some mold assessment activities involving sampling [FN491] and/or analysis that require specialized education/expertise in the relevant methodologies. The assessment and/or remediation activities might involve aspects of toxicology, industrial hygiene, and structural engineering (i.e., indoor movement of air/water). [FN492] It may therefore be important to ensure that the individual or organization considered for a particular task has the specific education and/or experience to perform it.

3. Tax Treatment of Assessment/Remediation Costs

The aggregate amount of monies that are and will be spent to perform mold assessment and/or remediation activities is significant. In some instances, the costs may be material in the context of a particular structure. The possible tax treatment of these costs is therefore of interest.

***375** a. Deductibility

The Internal Revenue Service ("IRS") has not addressed the deductibility of such costs. Expenses associated with mold remediation will either be classified as repairs or improvements. "Repairs" are deductible business expenses which restore property to its previous state and do not increase the property's value or make the property more useful or longer lived. [FN493] "Improvements" are capital expenditures which materially increase the value, longevity, or utility of the property compared to its previous value, longevity, or utility. [FN494]

The test for determining whether expenditures increase the value of the property is found in Revenue Ruling 94-38. [FN495] The value of the property is determined by comparing the status of the asset after the expenditure with the status of the asset before the condition arose that necessitated the expenditure (i.e., before the structure was contaminated with mold). [FN496]

The IRS has ruled that expenditures to remove and replace asbestos insulation in manufacturing equipment were required to be capitalized because such expenditures were improvements, not repairs. [FN497] The ruling concluded that the expenditures increased the value of the equipment over its value to the taxpayer before the replacement by reducing or eliminating the human health risks associated with asbestos. [FN498] In Northwest Corp. & Subsidiaries v. Commissioner, [FN499] the Tax Court held that the ***376** costs of removing asbestos materials must be capitalized because they were part of a general plan of rehabilitation and renovation that improved the building. [FN500] However, if asbestos remediation is made apart from remodeling or renovation, Northwest Corp. suggests that such costs would be currently deductible. [FN501]

There is arguably a difference between mold and asbestos. Asbestos was a part included in the original asset while mold was not. Mold occurs after the asset's creation. Mold remediation merely restores property to its original condition. Asbestos abatement is something more than merely restoring the property to its original condition because the asbestos was part of the original asset. Thus, mold remediation expenditures do not produce improvements to a structure beyond its original state.

Mold remediation expenditures do not result in improvements that increase the value of the property because the property was merely restored to its approximate condition before it was contaminated by the mold. In addition, mold remediation

expenditures do not prolong the life of the asset. These expenditures merely restore the property to its original useful life. Mold remediation expenditures do not adapt the property to a new or different use. Accordingly, mold remediation expenditures are arguably currently deductible.

b. Credits

The United States Toxic Mold Safety and Protection Act would have authorized tax credits for inspection and/or remediation of mold hazards. [FN502] The proposed credit would be equal to an amount up to 60% of mold inspection and/or remediation expenses incurred during the taxable year. [FN503] However, this proposed ***377** credit would be limited to $50,000. [FN504] If the bill is passed, the taxpayer would not be able to receive a double benefit from its mold inspection and/or remediation expenses (i.e., the taxpayer could not deduct the mold inspection and/or remediation expenses from its taxable income and then claim a credit for the same expenses).

B. Contractual Allocation of Risk/Responsibility

Mold has probably not until recently been deemed a potentially material real property transactional issue. Therefore, the organism was rarely specifically identified in the environmental liability allocation provisions of the structural transactional documents. Instead, materials or substances specifically listed in transaction documents have often included lead-based paint, [FN505] asbestos, transformers containing PCBs, [FN506] and petroleum underground storage tanks. These agreements will usually include clauses addressing compliance with applicable environmental laws and/or prohibiting certain activities involving hazardous materials, substances, or wastes.

The agreements used to document the sale, lease, financing, design, and construction of structures will contain provisions intended to allocate various potential liabilities and risks among the parties. [FN507] Likewise, the parties have the opportunity to identify the responsibilities associated with the assessment, remediation, or prevention of mold growth. These agreements can assign responsibility for any corresponding regulatory and common-law liabilities that may arise. If they fail to do so, more general provisions in the agreements may impose these responsibilities. However, reliance on such general provisions may make it difficult to predict how more specific liabilities and responsibilities will be allocated. [FN508]

***378** The use of contractual verbiage to address mold liabilities/risks are governed by some common principles/concerns. First, the parties should recognize that multiple parties are likely to be targeted in the event of a mold claim. The agreement drafted may govern to some extent how responsibility for mold claims are allocated between the parties. [FN509] Second, the value of the warranty, indemnity, or related provisions is dependent upon the future financial viability of the party providing it. Third, the identification of potential environmental issues (including mold) through an assessment will enable the parties to specifically allocate such risks. [FN510] Fourth, there may be some benefit in allocating the risks to the parties in the best position to control them. [FN511] Fifth, as always, a party's ability to obtain desired provisions will depend on its leverage and market conditions. [FN512]

1. Assessment Authority/Confidentiality

a. Authority

Transactions involving the transfer or financing of improved real properties will usually include provisions authorizing the assessment of environmental conditions and/or regulatory compliance. The party undertaking the assessment will typically involve the owner/operator of the structure or a potential purchaser, lessee, or lender. The transactional documents must authorize such activity if it is to be performed by a party other than the owner or operator. The parties will need to consider whether mold is encompassed by such provisions.

***379** b. Confidentiality

Some owners, operators, or managers will undertake internal audits or assessments of their structures to identify and/or quantify mold issues. If so, they may have an interest in maintaining the confidentiality of the results. This has been a concern for years of parties performing internal environmental assessments. Companies performing environmental audits [FN513] or assessments have recognized that undertaking these activities can pose certain risks.

One of the key concerns is that audits are, by design, intended to assess a facility's compliance status with respect to relevant federal and/or state environmental regulatory programs. In other words, their objective is to identify potential violations. Many companies and facilities fear that the audit results might ***380** be disclosed [FN514] or acquired by governmental

agencies or other parties. [FN515]

The general absence of governmental regulatory requirements applicable to mold probably minimizes this particular auditing risk. Instead, the principal concern will likely be the need to protect such results and/or supporting documents from potential litigants in subsequent common-law actions alleging damages. The attorney/client, work product, and/or self-evaluation privileges may only have limited usefulness in maintaining the confidentiality of audit or assessment documents. [FN516]

The perceived inadequacies or practical problems related to the use of the three common-law doctrines triggered an effort several years ago to enact statutory privileges to better ensure the maintenance of the confidentiality of environmental audits. Specifically, many states developed statutory privileges for environmental compliance audits. [FN517] The state statutes use terms such as "environmental audit" to define the protected activities. ***381** Such terms arguably encompass voluntary efforts to address indoor environmental issues and protect public health. As a result, the mold assessment activities would seem to fit within the scope of these programs' protections.

An Arkansas statute provides an example. The state allows a facility to conduct a voluntary "environmental audit" report which is privileged, if the statutory provisions are followed. [FN518] The "environmental audit report" is the set of documents developed as a result of the audit. [FN519] Providing the audit to a purchaser or lender does not void the privilege. [FN520]

2. Warranties

Identified or potential risks are often allocated between the parties in the transactional documents. This should be equally true for mold. The potential liabilities associated with these organisms ***382** may be identified and allocated. [FN521] An insurance policy may be used to cover a particular environmental issue for a fixed amount by the party allocated the risk. [FN522]

a. Compliance with Laws

The parties will need to recognize that few governmental requirements are applicable to mold. Therefore, a clause mandating compliance with governmental laws may not pick up mold or the conditions that facilitate its growth. Instead, a reference to problematic conditions or required maintenance practice may be necessary. Defining problematic conditions will be difficult because of the pervasive nature of the organism.

b. Insurance

The parties to a transaction often rely on insurance to address significant liabilities associated with a structure. The contract may specify both the type of insurance that is required and the parties that must obtain it. [FN523]

c. Complaints/Investigations

A purchase will often require that the seller either make various disclosures and/or warrant the absence of such events or activities. These might include prior tenant and/or structure occupant complaints concerning the environment inside the structure. Disclosures related to mold might include indoor air pollution/mold complaints and prior remediation/sampling activities.

C. Insurance

Many potential structural liabilities are addressed through the procurement of insurance. The types of policies used to cover these risks will vary with the party seeking coverage. A building manager or lessor may need a policy that addresses operational risks. The lender may have a different perspective. It ***383** may use insurance to cover known or unknown risks related to the mortgaged property. Likewise, the architect or contractor may have to cover the exposure uniquely associated with their services. The different parties' need for coverage of mold risks will similarly vary.

The usefulness of an insurance policy is dependent upon the scope of the coverage, breadth of exclusions, and cost. Parties to transactions involving the transfer of structures will often consider whether insurance can satisfy any or all of the allocated risks. The initial question will be whether standard liability or casualty policies provide needed coverage to address the liabilities associated with mold. [FN524] If not, endorsements addressing mold or more specialized policies that cover these specific risks or conditions may need to be considered. [FN525]

1. Standard Policies

a. Coverage Issues

The liability exposure associated with structural mold has generated interest in what coverage (if any) is provided by general liability or casualty policies. [FN526] The coverage provided varies [FN527] as a function of policy language. [FN528] However, the courts ***384** have been increasingly asked to determine whether different policy provisions encompass mold. [FN529] The answer to the coverage question depends upon the answer to two underlying questions: (1) Did the mold result from a covered peril? and (2) Is there express exclusionary language, even if it did result from a covered peril? [FN530] Such issues are highlighted by a sampling of several recent decisions.

i. Mold as a "Loss" and a "Cause of Loss"

The Arizona Court of Appeals in Liristis v. American Family Mutual Insurance Co. [FN531] found that an insurer was not entitled to summary judgment on the issue of mold coverage. [FN532] The plaintiffs/insureds filed a claim for water damage that occurred after their roof was damaged by fire, [FN533] and also had their home tested for mold. [FN534] Mold was present, and their claim for "contamination caused by mold" was denied by their insurer. [FN535]

The relevant policy language stated, "[w]e do not cover loss to the property . . . resulting directly or indirectly from or caused by one or more of the following. Such loss is excluded regardless of any other cause or event contributing concurrently or in any sequence to the loss." [FN536] The list that followed labeled "Other Causes of Loss" included mold, presumably excluding mold damage. [FN537] The court interpreted the language to mean that mold could be both a loss and a cause of a loss. [FN538] Finding that the mold in plaintiffs' home was the actual loss, the court ***385** then held that "mold damage caused by a covered event is covered under the American Family policy in this case." [FN539] The court went on to note that a loss that was merely caused by mold would have been excluded. [FN540]

ii. Occurrence Based Coverage

Liberty Mutual Fire Insurance Co. v. Ravannack [FN541] presented a Louisiana federal district court with a question of policy interpretation in a mold-related injury case. [FN542] The insureds filed a complaint against several defendants, including their homebuilder, a subcontractor who did plaster work, those companies' insurers, and their own insurer to recover money for damages and injuries due to alleged defective construction resulting in structural damage and wood decay. [FN543] Because of the decay, plaintiffs claimed that mold developed to which the Ravannacks' children were continuously exposed. [FN544]

When suit was filed, GAINSCO, the subcontractor's insurer, filed a motion for summary judgment claiming that it did not provide coverage at the time the Ravannacks' injuries occurred. [FN545] The subcontractor's Commercial General Liability ("CGL") policy provided coverage for bodily injury or property damage to which the insurance policy applied. [FN546] The policy stated: "This insurance applies to 'bodily injury' or 'property damage' only if (1) the 'bodily injury' or 'property damage' is caused by an 'occurrence' that takes place in the 'coverage territory' and (2) the 'bodily injury' or 'property damage' occurs during the policy period." [FN547] "Occurrence" was defined by the policy as "'an accident, including continuous or repeated exposure to substantially the same general harmful conditions.'" [FN548]

Therefore, the motion for summary judgment, and the question of coverage, hinged on the timing of the occurrence of the ***386** injury. [FN549] The court determined that the policy's definition of "occurrence" encompassed coverage during the time the GAINSCO policy was in effect under the clear meaning of the contract. [FN550] Because there was a possibility for coverage under the GAINSCO policy, the court denied its motion for summary judgment and allowed the case to go to trial. [FN551]

iii. Notice Requirements

Leverence v. United States Fidelity & Guaranty, [FN552] another homeowner case, produced an outcome similar to Ravannack. Almost 800 occupants who lived in pre-manufactured homes sought damages from the manufacturer, Tri-State Homes, Inc. ("Tri-State"), and its insurers for "bodily injuries and for the cost of repairs required due to their bodily injuries or illnesses." [FN553]

Plaintiffs alleged that the excessive moisture in their homes was due to defective design and faulty construction practices. [FN554] The Tri-State's CGL policy required it to give notice of an "occurrence" "as soon as practicable." [FN555] As in

most CGL policies, "occurrence" was defined as "an accident or happening or event or continuous or repeated exposure to conditions which unexpectedly and unintentionally results in personal injury, property damage . . . during the policy period." [FN556] The court held that because the occupants did not connect their health problems with the excessive humidity, Tri-State was not on notice and thus could not give notice to its insurers for potential claims. [FN557] That being so, summary judgment for the insurer as to the notice-of-the-occurrence requirement was denied. [FN558]

The homeowners also claimed property damage due to repairs necessary to cure health problems. Although their claim was denied, they were not completely precluded from recovery. ***387**[ FN559] Their home insurance policy contained a pollution exclusion that stated the policy did not apply to

bodily injury or property damage arising out of the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any water course or body of water; but this exclusion does not apply if such discharge, dispersal, release or escape is sudden or accidental. [FN560] The court concluded that the growth of mold was undisputedly "unexpected and unintended," fitting into the "sudden or accidental" language of the policy, and denied summary judgment for the insurers. [FN561]

iv. Covered Perils

In Blaine Construction Corp. v. Insurance Co. of North America, [FN562] plaintiff construction company used an exception to the faulty workmanship exclusion in its builder's all-risk property damage policy to establish a claim. That exception provided coverage for damage or loss "ensuing" from an insured peril. No coverage, however, would be provided for costs incurred from correcting faulty workmanship itself. [FN563]

The policy at issue contained three clauses of interest. First, the "perils insured against" clause stated, "'[t]his policy insures against ALL RISKS OF DIRECT PHYSICAL LOSS OR DAMAGE to property insured including general coverage . . . except as excluded.'" [FN564] Next, the perils excluded section provided: "[t]his policy does not insure loss or damage caused directly or indirectly by any Peril excluded. Such loss or damage is excluded whether contributed to, in whole or in part, by any excluded Peril." [FN565] Finally, the policy excluded twenty named perils, including "faulty workmanship or faulty materials, ***388** unless loss or damage from an insured Peril ensues and then only for such ensuing loss or damage." [FN566] Plaintiffs' policy, however, did not contain a general water damage exclusion. [FN567]

When the insulation's vapor barrier began to accumulate condensation, forming mold, the building owner determined that Blaine would have to remove the water-soaked insulation. [FN568] The cost to Blaine was allegedly $315,000. [FN569] Defendant denied his claim. [FN570] The trial court held that the exclusionary clause in plaintiff's policy unambiguously precluded its recovery and granted summary judgment for the defendant. [FN571] Upon de novo review, the Sixth Circuit court reversed, holding the faulty workmanship exclusion did not bar plaintiff from recovery since water, a covered peril, is what caused the damage and that was the reason plaintiff sought indemnity. [FN572]

v. Pollution Exclusions

In Lexington Insurance Co. v. Unity/Waterford-Fair Oaks, Ltd., [FN573] a Texas court addressed the issue of whether an insurer was liable for mold damage to first- and second-floor apartments that was caused by leaks in the roof despite the pollution exclusion in the insured's policy. [FN574] The policy at issue provided that the policy did not cover

loss or damage caused by, resulting from, contributed to or made worse by actual, alleged or threatened release, discharge, escape or dispersal of CONTAMINANTS or POLLUTANTS, all whether direct or indirect, proximate or remote or in whole or in part caused by, contributed to or aggravated by any physical damage insured by this policy. [FN575] Pollutants, in brief, included liquids, among other things, which once released, "can cause or threaten damage to human health or ***389** human welfare or causes or threatens damage, deterioration, loss of value, marketability or loss of use to property insured hereunder, including, but not limited to, bacteria, fungi, virus." [FN576]

The court held that the pollution exclusion effectively excluded fungi in its list of contaminants. [FN577] Because the policy was constructed to exclude damage "that is not only 'caused' but that is 'contributed to or made worse by' any of the defined contaminants or pollutants," the court found the insurer was not liable for damages due to the mold. [FN578]

vi. Exposure Via Employment

An Arkansas case demonstrates that insurers are not alone in liability suits. More frequently, general contractors, engineers,

architects, homebuilders, [FN579] and schools [FN580] are being sued. [FN581] In Crossett School District v. Gourley, [FN582] the Arkansas Court of Appeals heard a case brought by a teacher against her employer school district. [FN583] A new heating and air-conditioning system was installed in Carolyn Gourley's classroom in the summer of 1989. [FN584] Leaks in the system caused mold to develop, which irritated the teacher's pre-existing allergies. [FN585]

In her claim brought before the Workers' Compensation Commission, Gourley was compensated for the occupational disease she developed from exposure to mold. [FN586] On appeal, the ***390** school district argued that appellee had not proven that her employment increased the risk of developing the occupational disease she contracted. [FN587] The Arkansas Court of Appeals found otherwise, holding that even though the exposure to mold was not particular to the occupation of a teacher, in this case, it was apparent that her exposure to mold was due to her employment, thus increasing her risk. [FN588]

b. Policy Cancellations/Exclusions

Some property and casualty policies provide coverage for certain mold-related risks. However, various insurance lines have paid significant mold-related claims over the past few years. [FN589] These claims have often involved residential or commercial structures. [FN590]

A number of insurance companies have responded to the increase in claims by refusing to issue new policies or canceling existing ones. [FN591] The carriers have also amended certain policies to specifically exclude or narrow coverage for various mold risks. [FN592] This is often accomplished by precluding coverage for naturally occurring or uncovered events. [FN593]

***391** Mold has forced both state insurance commissioners and legislatures to address insurance policy cancellations and related issues. The states' efforts have included attempting to preserve the ability of homeowners in some states to obtain policies for their homes. [FN594] They have also set parameters for insurance companies proposing to modify their policies to exclude certain mold risks or otherwise narrow coverage. [FN595]

Even if coverage for mold is available, the cost of the policy premiums is likely to rise. [FN596] The residential market has experienced mold-related premium increases in some states. [FN597] Premiums may vary in some instances because of a characteristic ***392** of the structure. [FN598] Substantial increases would obviously potentially impact the profitability of residential, commercial, and other rental properties. [FN599]

3. Mold Endorsements/Environmental Impairment Liability Insurance Policies

The exclusion of various mold risks from an insured's liability and casualty policy means it will have to determine whether coverage is available from another source. [FN600] Parties seeking coverage might determine if a standard liability or casualty carrier is willing to insert an endorsement into the policy to address mold-related damages. In the alternative, they might seek separate specialty policy coverage. The relevant policies may include environmental impairment liability ("EIL") insurance policies amended to cover mold, or a policy solely focused on mold-related risks. [FN601] This coverage would presumably be obtained if the risk warrants the additional financial outlay.

EIL policies will typically provide coverage for on-site/off-site remediation and common-law bodily injury/property damage claims related to pollution conditions. [FN602] Common types of policies include Cleanup Cost Cap, Pollution Liability, and Secured Creditor. [FN603] They are often used to provide the parties ***393** greater certainty in quantifying and allocating environmental risks in contaminated real property transactions. [FN604] Various versions of these policies may be substituted in some instances for a transactional assessment [FN605] or an indemnity [FN606] that would otherwise be required to address a potential environmental risk. [FN607]

The process for issuing an EIL policy differs from the general casualty and liability policies in a key respect. The casualty and liability policies are issued by most companies using similar formats and terms. In contrast, EIL policy terms are not uniform. The terms may vary by transaction and company. [FN608] The final policy terms are often the result of negotiation between the insurance company and the insured. [FN609] The policies may be crafted to address the needs of a particular project. [FN610]

***394** The potential applicability of EIL policies to mold should be considered. However, mold exclusions [FN611] have been placed in some of these policies. [FN612] This has been accomplished by a specific reference to the organisms or more generalized exclusions. [FN613] Further, coverage may be limited to contaminants whose presence constitutes non-

compliance with environmental laws and/or is in excess of background/natural conditions.

Some insurance companies may be willing to expand these policies to cover mold liabilities. [FN614] The removal of the exclusion may require additional underwriting [FN615] and a premium. [FN616] If so, unlike more standardized, general comprehensive liability ***395** policies, companies issuing pollution liability or environmental impairment policies are generally willing to negotiate these terms. [FN617] The policy might be revised to include this risk by addition of terms such as mold or fungus to the definition of "pollutant." [FN618]

## VII. CONCLUSION

The perceived presence of problematic amounts of mold in our structures has received significant attention. Is this attention warranted? It really does not matter from the perspective of the improved real property market. The market will ask whether material costs may be incurred. Unless this possibility can be excluded or somewhat quantified, the value of various structures may be affected.

The challenge of addressing mold in the transactional context will be the development of cost-effective assessment techniques that can be incorporated into standard due diligence procedures. Equally important will be a better understanding of the risks associated with structural mold. This may be complicated by the absence of both applicable permissible exposures limits or standards. Instead, we may simply have to better determine through research and education the difference between a structural threat and a nuisance.

A long-term solution is, of course, the elimination of growth conditions for objectionable concentrations of mold in a structure. The attention focused on these organisms has presumably demonstrated the need to ensure the structural integrity of the building envelope and proper operation of HVAC and related systems. Parties to many transactions will presumably pay greater attention to these issues in assessing and pricing structures. The proven ability to address mold issues will likely become a factor in the selection of both construction professionals and the material used in erecting the structures.

[FNa1]. Chairman, Environmental & Natural Resources Practice Group in the Little Rock, Arkansas law firm of Mitchell, Williams, Selig, Gates & Woodyard, P.L.L.C., practicing in the areas of environmental, energy, and water law. Adjunct Professor, University of Arkansas at Little Rock School of Law 1986- present. Assistant General Counsel, Petroleum Marketers Association of America, Washington, D.C. 1984-1986 B.S., J.D., University of Arkansas; LL.M., George Washington University.

[FNd1]. Associate, Business Litigation Group in the Little Rock, Arkansas law firm of Mitchell, Williams, Selig, Gates & Woodyard, P.L.L.C., practicing in the areas of construction, real property, and financial institution litigation. B.S.B.A., magna cum laude; J.D., magna cum laude, University of Arkansas.

The authors would like to thank Ken Peters, Federal Home Loan Mortgage Corporation; Dr. Jay Gandy, Center for Toxicology and Environmental Health, LLC; Thomas P. Jones, Pollution Management, Inc.; Lance R. Miller, Harry Hamlin, Derrick W. Smith, Jennifer Pierce, Sharon New, and Lynne Gehrke, Mitchell, Williams, Selig, Gates and Woodyard, P.L.L.C.; and law students, Anthony Juneau, Lori Burrows, Brooke Augusta Owen and Jenny Moss, for their assistance in the preparation of this article. The views in this article are solely those of the authors and do not necessarily represent those of any organization with which they are or have been associated.

[FN1]. Heraclitus, Greek philosopher of the late sixth century B.C.

[FN2]. See Mold: A Growing Problem: Joint Hearing Before the Subcomms. on Oversight and Investigations Housing and Community Opportunity of the House Comm. on Financial Services 107th Cong., 2d Sess. 51 (2002) [hereinafter Joint Hearing] (prepared statement of Gerald M. Howard, Executive Vice President, National Association of Home Builders) ("Mold is a ubiquitous substance that predated our arrival on the planet and will likely survive us as well.").

[FN3]. John Parker Sweeney & Anthony B. Taddeo, Jr., Addressing Mold in Real Estate Transactions: Don't Let The Sleeping Dog Lie, Real Est. Fin. J., Spring 2002, at 73; see also Janet M. Macher et al., A Two Year Study of Microbiological Indoor Air Quality in a New Apartment, 46 Archives of Envtl. Health 25, 25 (1991).

[FN4]. See Sylvia Peña-Alfaro, Comment, The Toxic Mold Terrifying Texas: Mold's Hold on the Insurance Industry, 34 St.

Mary's L.J. 541, 543 (2003).

[FN5]. This statement is not intended to discount the significant damage mold growth can cause to a variety of products or materials. For example, see Higgins v. Amazon.com, Inc., No. 02 CIV. 1604RMBFM, 2002 WL 31760237 (S.D.N.Y. 2002) (referencing a shipment of gift boxes damaged by mold) and United States v. 449 Cases, Containing "Tomato Paste," 212 F.2d 567 (2d Cir. 1954) (referencing mold contamination found in a shipment of tomato paste).

[FN6]. Nana Nakano, Toxic Mold in California: Recent Verdicts and Legislation, 20 Toxic Chem. Litig. Rep., July 11, 2002, at 12; see also Micheal F. Dehmler, "Toxic" Mold Part II, Constructor, Nov. 2001, at 16 ("From the media hype, you would think that mold is a plague of biblical proportions that has recently descended upon us."); Peña-Alfaro, supra note 4, at 543 (referencing news reports educating the public regarding mold-related illnesses and associated subjects).

[FN7]. See Stephen J. Henning & Daniel A. Berman, Mold Contamination: Liability, and Coverage Issues: Essential Information You Need to Know for Successfully Handling and Resolving Any Claim Involving Toxic Mold, 8 Hastings W.-Nw. J. Envtl. L. & Pol'y 73 (noting media reports of health impacts from mold found in structure).

[FN8]. Gary J. Tulacz, The Top 600 Specialty Contractors, Engineering News-Rec., Oct. 7, 2002, at 44 (stating that public awareness is one of the factors spurring the mold clean-up market); see also Peña-Alfaro, supra note 4, at 543 (noting possibility that upsurge in home owners filing mold-damage insurance claims may be due to public's greater knowledge about the topic).

[FN9]. Jeffrey A. Moerdler, Florida May be Next Hotbed for Mold Legislation, Indus. Env't, Sept. 2002, at 2 [hereinafter Moerdler, Florida Mold Legislation] (referencing the public awareness of adverse effects of mold); Jeffrey A. Moerdler, What Property Owners Need to Know about Mold; Insiders' Outlook, Real Estate Wkly., Oct. 30, 2002, at 30 [hereinafter Moerdler, Insider's Outlook]; see also Dehmler, supra note 6, at 16 ("Whether or not the hysteria is justified, the fear is real, and it has created a multi-billion dollar mold industry.").

[FN10]. See Joint Hearing, supra note 2, at 83 (prepared statement of Thomas C. Tighe, International Union of Operating Engineers); see also Arnold W. Reitze, Jr., & Sheryl-Lynn Carof, The Legal Control of Indoor Air Pollution, 25 B.C. Envtl. Aff. L. Rev. 247, 249 (1998).

[FN11]. See generally Moerdler, Insider's Outlook, supra note 9 (referencing mold's impact on various types of structures including office buildings).

[FN12]. See Tulacz, supra note 8, at 24-44. This is in contrast to an indoor issue such as asbestos. The Federal Environmental Protection Agency ("EPA") banned certain structural uses of asbestos in the early 1990s. Reitze & Carof, supra note 10, at 296.

[FN13]. See Robert Julavits, Mold Crisis Puts Insurers, Lenders in Tight Corner; Underwriters Balk, Just Like We're Seeing for Terrorism, Am. Banker, Jan. 18, 2002, at 1 (referencing the potential effect of mold issues on multi-family properties).

[FN14]. See Dehmler, supra note 6, at 17 (referencing the remediation of mold in a Martin County, Florida, hotel).

[FN15]. See Hodgson, Russ, Andrew, Woods & Goodyear, LLP v. Isolatek Int'l Corp., 752 N.Y.S. 2d 767 (N.Y. App. Div. 2002) (referencing the remediation of mold in office building).

[FN16]. Carla Dodd, PDG Environmental, Jurgiel & Associates Battle Toxic Mold, 22 St. Louis Bus. J., Jan. 4, 2002, at 13A (noting increases in residential inquiries regarding mold).

[FN17]. See New Haverford P'ship v. Stroot, 772 A.2d 792 (Del. 2001) (considering allegations by apartment complex tenants that mold caused health problems). Students are said to be particularly vulnerable to molds because they spend a great deal of time in school, and poor air quality may affect children more severely than adults. Mike Kennedy, Creating Ideal Facilities, Am. Sch. & U., Jan. 2002, at 32.

[FN18]. The affected structures have included mobile homes. See Chenniliaro v. Kaufman & Broad Home Sys., 636 So. 2d

246 (La. Ct. App. 1994) (concerning a lawsuit against mobile home manufacturer alleging the presence of mold in mobile home).

[FN19]. See Joe Agron, Healthy Buildings, American School, Am. Sch. & U., Oct. 2002, at 6 (referencing the periodic discovery of mold in educational institutions); Greta Smedje & Dan Norback, New Ventilation Systems at Select Schools in Sweden--Effects on Asthma and Exposure, 55 Archives of Envtl. Health 18, 18 (2000) (referencing increasing concern about the school environment on children's health).

[FN20]. See generally Robert E. Geisler, The Fungusamongus: Sick Building Survival Guide, 8 St. Thomas L. Rev. 511 (1996) (referencing the fungi problem in a Martin County, Florida, courthouse). The litigation associated with the mold discovered in the Martin County Florida courthouse is discussed in D. Chris Harkins, Comment, The Writing is on the Wall . . . and Inside It: The Recent Explosion of Toxic Mold Litigation and the Insurance Industry Response, 33 Tex. Tech. L. Rev. 1101 (2003).

[FN21]. See Mike Bischoff, Comment, Theories of Toxic Mold Liability Facing Arizona Homebuilders, 34 Ariz. St. L.J. 681, 681 (2002) (citing mold-infested dwellings in Leviticus).

[FN22]. See Joint Hearing, supra note 2, at 58 (prepared statement of Stephen C. Reed, M.D., Chief, Air Pollution and Respiratory Health Branch, National Center for Environmental Health, Centers for Disease Control and Prevention) (stating that despite some unresolved scientific questions, exposure to high levels of mold causes some illnesses); Barb Epstein, Breathe Easy: Preventing Asthma and Allergies in School Children, Sch. Plan. & Mgmt., July 1999, at 32 (referencing mold and fungi as two of the pollutants in school buildings that may trigger asthmatic or allergic reactions).

[FN23]. The exceptions might include the possible presence of asbestos or lead-based paint. These building materials have been utilized in millions of structures of various types. See Reitze & Carof, supra note 10, at 292-300 (discussing asbestos); Jane Schukoske, The Evolving Paradigm of Laws on Lead-Based Paint: From Code Violation to Environmental Hazard, 45 S.C. L. Rev. 511 (1994) (discussing lead-based paint); Thomas F. Zimmerman, The Regulation of Lead-Based Paint in Air Force Housing, 44 A.F. L. Rev. 169 (1998) (discussing same).

[FN24]. The elderly, infants, and infirm may be potentially more likely to be adversely affected by indoor contaminants because they are inside structures nearly all the time. See Reitze & Carof, supra note 10, at 249.

[FN25]. A pair of authors make an interesting observation concerning mold in the real property transactional context: "First, perception is reality; concerns about mold can rarely be dismissed, they must be addressed." Sweeney & Taddeo, supra note 3, at 74.

[FN26]. See Booker v. Real Homes, Inc., No. 04-02-00122-CV, 2003 WL 117987, at *2 (Tex. App. Jan. 15, 2003) (referencing an infestation of "toxic mold" in a structure); Jensen v. Amgen, Inc., 129 Cal. Rptr. 2d 899 (Cal. Ct. App. 2003) (discussing tests indicating the presence of "toxic mold"); Letter from Mark D. Hansen, P.E., CSP, American Society of Safety Engineers, to Honorable John Conyers, Jr., U.S. House of Representatives, Comments on the "United States Toxic Mold Safety and Protection Act" (H.R. 5040) (Aug. 22, 2002) ("Toxic mold is being used in the popular press as an umbrella term to represent a broad spectrum of health threats, from substances that might cause mild allergic reactions in some people to environmental threats such as leaking sewage pipe contamination that threatens all people.").

[FN27]. See Isolatek Int'l Corp., 752 N.Y.S.2d at 768 (referencing an office building lessee's lawsuit against various parties in relation to remediation of mold in a structure); Terry v. Ottawa County Bd. of Mental Retardation & Dev. Disabilities, 783 N.E.2d 959 (Ohio Ct. App. 2002) (concerning allegations by employees of state agency that their workplace posed a health threat because of the presence of mold).

[FN28]. Martin v. Fulton City Sch. Dist., 754 N.Y.S.2d 676 (N.Y. App. Div. 2002) (concerning a school teacher seeking worker's compensation, alleging headaches, sinus congestion, etc., related to school building's indoor air quality).

[FN29]. See generally Nakano, supra note 6 (discussing a condominium association's alleged failure to address mold growth).

[FN30]. See Dehmler, supra note 6, at 16 ("The construction, insurance and real estate markets are besieged by mold

litigation and the never-ending quest to locate and eradicate mold.").

[FN31]. Amica Mut. Ins. Co. v. Henderson, No. 02 C 5193, 2003 WL 10300 (N.D. Ill. Jan. 10, 2003) (concerning alleged negligence by insurance company in connection with its response to insured's fire and water leak resulting in mold contamination).

[FN32]. Dehmler, supra note 6, at 17 (referencing parties that have been defendants in mold-related lawsuits such as contractors, design professionals, owners, developers, material suppliers, etc.); see also L.L. Bean, Inc. v. U.S. Mineral Prods. Co., No. CV-98-632, 1999 Me. Super. LEXIS 323 (Dec. 3, 1999) (concerning a supplier sued for negligence, strict liability, and breach of warranty when mold was discovered in a structure's fire-proofing material).

[FN33]. Mondelli v. Kendall Homes Corp., 631 N.W.2d 846 (Neb. 2001) (concerning a homebuilder who was sued by a homebuyer for personal injuries allegedly caused by mold in the purchased home).

[FN34]. This is not intended to be a definitive list of potential defendants. Other parties that could conceivably be targeted include real estate brokers, building product manufacturers, structure/home inspectors, and appraisers. See Riley v. Hoisington, 80 Ark. App. 346, 96 S.W.3d 743 (2003) (referencing a suit against a home inspector by purchasers for allegedly failing to identify prior flooding in a residential structure).

[FN35]. See Ganheart v. Executive House Apartments, 671 So. 2d 525 (La. Ct. App. 1996) (concerning an apartment lessee who alleged respiratory problems related to the presence of mold).

[FN36]. See Harley v. 135 E. 83d Owners Corp., 655 N.Y.S.2d 507 (N.Y. App. Div. 1997) (concerning a tenant suit against overhead apartment owner alleging mold facilitated by water leak caused various health problems); Miller v. Lakeside Vill. Condo. Ass'n, Inc., 2 Cal. Rptr. 2d 796 (Cal. Ct. App. 1991) (concerning a plaintiff who alleged that she developed immune system disorders from residing in mold-infested condominium).

[FN37]. See James E. Trader, Do Pollution and Mold Threaten Your Financial Future?, Constructor, Feb. 2003, at 12 ("The insurance carriers are also 'skittish' about mold. From their perspective, mold-related claims are too new, too many, and potentially, too expensive to be predictable. An obvious lack of credible loss history prevents underwriters from reliably evaluating a firm's exposure.").

[FN38]. An article quoting an unidentified source with the Insurance Information Institute noted the insurance industry's complaints about Texas mold litigation: "[The] source complains that insurance companies cannot feasibly provide mold insurance because the risk is not spread over a broad range of policyholders and because of a slew of scientific questions--such as the point at which evacuation is necessary or when clean is clean--remain unanswered." Democratic Push for EPA Mold Exposure Rules Draw GOP Fire, Environmental Policy Alert, (Inside EPA, Washington D.C.), Aug. 7, 2002, at 26 [hereinafter Environmental Policy Alert].

[FN39]. See Anderson v. Allstate Ins. Co., Nos. 01-15145, 01-15246, 01- 15307, 01-15330, D.C. No. CV-00-00907-PAN, 2002 WL 2021617 (9th Cir. Sept. 3, 2002) (referencing the impact of mold on the process of insurance claim adjustment); Mark E. Ruquet, Mold Claims: Agents' Options Limited, Nat'l Underwriters, Mar. 25, 2002, at 24 (noting insurers have had to change their loss adjustment practices in Texas in response to water damage claims).

[FN40]. Strader v. Grange Mut. Ins. Co., 39 P. 3d 903 (Or. 2002) (concerning an insured's allegation that the insurance company's refusal to pay for mold abatement breached a duty to prevent further harm). The insurance industry's struggles to process a high volume of environmental claims are not limited to mold. Other high volume claims include asbestos and lead. See Derek Koch, Environmental Claims Processing: Locking up Runaway Costs; Special Report: Claims Management and TPAS, Risk & Ins., Jan. 1, 2003, at 20. These environmental claims can be complicated and expensive to manage. Id.

[FN41]. See Allison v. Fire Ins. Exch., 98 S.W.3d 227 (Tex. App. 2002) (concerning an allegation that an insurance company failed to attempt in good faith to effectuate a prompt settlement of water damage claims involving mold).

[FN42]. Anthony J. Buonicore & Dianne P. Crocker, It's Darkest Before the Dawn, EM, Dec. 2002, at 10 ("Mold-related lawsuits surfaced in record numbers in late 2001 and early 2002, striking fear in the hearts of lenders and property owners.").

[FN43]. See Sweeney & Taddeo, supra note 3, at 74 (stating that media attention, plaintiff attorneys' claims of the presence of mold in commercial properties, and legislative proposals to regulate mold may make the organisms a genuine concern to buyers, lenders, and sellers in real estate transactions).

[FN44]. For example, the potential purchaser of a structure will need to address whether there are material liability issues associated with structural mold. See id. at 84 (referencing the effect on pending California real estate transaction of lessee's lawsuit alleging damages due to mold).

[FN45]. Id. at 74 (noting structure buyers, lenders, and sellers concern about mold).

[FN46]. Maryland State Task Force on Indoor Air Quality, Final Report 14 (July 1, 2002) [hereinafter Final Report] (discussing the role of building management in addressing indoor air quality issues).

[FN47]. An arguably analogous situation has been the presence of lead-based paint in structures. See Jane Schukoske, The Evolving Paradigm of Laws on Lead-Based Paint: From Code Violation to Environmental Hazard, 45 S.C. L. Rev. 511, 538 (1994) (noting lenders' interest in the potential impact of lead-based paint on a structure's value).

[FN48]. John W. Dreste et al., Contractual Risk Allocations for Mold Conditions, Constructor, Feb. 2003, at 14 (stating that mold-related litigation claims present a risk management challenge for contractor and other construction industry participants).

[FN49]. See Committee Will Mold a Standard Questionnaire, Standardization News, Jan. 2003, at 12 [hereinafter Standard Questionnaire]. A Virginia real estate agent stated: "Mold's highly publicized destructive and ubiquitous qualities, coupled with certain individuals' sometimes severe allergic reactions, have placed its detection high on the radar screens of lenders, insurers, and prospective purchasers of commercial and residential real estate . . . ." Id.

[FN50]. A 1999 article discussing the relative difficulties environmental issues sometimes pose in a transactional context notes:

> There are several reasons for this emphasis on environmental risks and due diligence. First, there is the fear of the unknown. Unlike other risks, such as title defects, which can be ascertained at a relatively low cost prior to the closing of the transaction and which can be effectively managed through the agreements of the parties, environmental defects associated with a business often cannot be identified prior to closing; even after spending significant sums for environmental due diligence.

Charles P. Efflandt, When the Tail Wags the Dog: Environmental Considerations and Strategies in Business Acquisitions, Sales and Merger Transactions, 39 Washburn L.J. 28, 28 (1999).

[FN51]. See generally Dreste et al., supra note 48, at 14 (noting availability of various tools for contractors and subcontractors to use to manage risks associated with mold conditions on construction projects); Moerdler, Insider's Outlook, supra note 9, at 30 (referencing need for various parties working with rental properties to utilize risk allocation vehicles to address risks related to mold).

[FN52]. Two commentators note that the goal in acquiring insurance should be to transfer as much of the environmental risk as possible to a financially secure insurance carrier that is able to pay the claims should they arise. See Chris A. Mattison & Edward H. Widmanny, Environmental Insurance: An Introduction for the Environmental Attorney and Risk Manager, 30 Envtl. L. Rep. 10365, 10366 (2002). A detailed examination of the issues associated with the allocation of insurable risks in the commercial lease context is found in Sidney G. Saltz, Allocation of Insurable Risks in Commercial Leases, 37 Real Prop. Prob. & Tr. J. 479 (2002).

[FN53]. See Colleen E. Healy & Mark S. Hacker, The Importance of Identifying and Allocating Environmental Liabilities in the Sale or Purchase of Assets, 10 Vill. Envtl. L.J. 91 (1999).

[FN54]. For example, one trade association stated that most general contractors and subcontractors have lost their liability coverage for mold-related claims alleging property damage or bodily injury. Joint Hearing, supra note 2, at 123 (prepared statement of the Independent Insurance Agents and Brokers of America, Inc.); see also James E. Trader, Do Pollution and

Mold Threaten Your Financial Future?, Constructor, Feb. 2003, at 12 (discussing mold insurance coverage issues relevant to contractors). The applicability of casualty policies to the presence of mold can be a contested issue. See Prudential Prop. & Cas. Ins. Co. v. Lillard-Roberts, No. CIV-01-1362-ST, 2002 WL 31974401 (D. Or. June 19, 2002) (disputing whether a homeowner's "all-risk" insurance policy covered water damage and associated mold).

[FN55]. Of course, this is true for any risk or potential liability.

[FN56]. See Lee Ann Gjertson, Insurers Turn to Capital Markets for Risk Sharing, The Am. Banker, Oct. 1, 2002, at 10 (characterizing mold as a risk difficult to cover in traditional markets).

[FN57]. See Eva M. Fromm et al., Allocating Environmental Liabilities in Acquisitions, 22 J. Corp. L. 429 (1997). Generally speaking, an action level establishes a permissible level of contaminant in a given environmental media (i.e., soil, ground water, etc.).

[FN58]. See generally John P. Springston, Fungi and the Indoor Environment, Occupational Hazards, Oct. 1998, at 143 (stating there are no official standards or guidelines for fungal or bacterial bioaerosols).

[FN59]. Megan Kannerick, A Growing Problem, New Orleans City Bus., Dec. 3, 2001, at 23.

[FN60]. A 2003 article notes: "Involved parties such as lenders or building owners use a wide range of assessment and screening scopes, formats and questionnaires when addressing the potential liability from visible mold. Without a standard format for mold screenings, different formats produce different findings." Standard Questionnaire, supra note 49, at 10. The parties to a transaction may lack a common baseline to address mold. Id.

[FN61]. Telephone Interview with Kenneth G. Peters, Associate General Counsel, Federal Home Loan Mortgage Corporation (Apr. 3, 2003) [hereinafter Interview with Peters].

[FN62]. Id.

[FN63]. Id.

[FN64]. Id.

[FN65]. Id.

[FN66]. Interview with Peters, supra note 61.

[FN67]. Id. Peters served on the United States Department of Housing and Urban Development Taskforce on Lead-Based Paint Hazard Reduction and Financing.

[FN68]. Id.

[FN69]. Id.

[FN70]. Hal Levin & Kevin Teichman, Indoor Air Quality--for Architects, 72 Progressive Architecture, Mar. 1991, at 52 (noting that indoor air quality involves multiple pollutants, building types, and sources with confounding factors such as thermal comfort and job stressors); see also Schmidt v. County of Norfolk, No. 02-00614, 2002 WL 31187827 (Mass. Super. Aug. 15, 2002) (concerning the extent of hazard posed by indoor air conditions in a courthouse).

[FN71]. A discussion of various indoor air pollutants and their sources is found in Grace C. Guiffrida, The Proposed Indoor Air Quality Act of 1993: The Comprehensive Solution to a Far-Reaching Problem?, 11 Pace Envtl. L. Rev. 311, 320 (1993).

[FN72]. A few of the articles that have addressed this issue include id.; Gene J. Heady, Comment, Stuck Inside These Four Walls: Recognition of Sick Building Syndrome Has Laid the Foundation to Raise Toxic Tort Litigation to New Heights, 26 Tex. Tech. L. Rev. 1041 (1995); Reitze & Carof, supra note 10.

[FN73]. Final Report, supra note 46, at 7. A detailed discussion of various indoor air pollutants is found in Reitze & Carof, supra note 10; see also John E. Schillinger et al., Airborne Fungi and Bacteria: Background Levels in Office Buildings, J. Envtl. Health, Sept. 1, 1999, at 9.

[FN74]. See Terry M. Brennan & William A. Turner, Indoor Air Quality Primer: What Factors and Conditions Cause Indoor Air Quality Problems and What Can You Do To Stop Them? A Practical Guide to Ventilation Practices & Systems for Existing Buildings, Heating, Piping, Air Conditioning, May 1, 1999, at S5 (noting that almost anything can be a source of indoor air pollution).

[FN75]. Id. § 1.2. Examples of outside contaminants moving into the structure include auto exhaust, fungal spores, and construction-related contaminants. Id. Potential internal contaminants include off-gassing from carpets and furniture to tobacco smoke and copying equipment. See also Final Report, supra note 46, at 7.

[FN76]. Brennan & Turner, supra note 74, § 1.2. Poor indoor air quality has been variously defined by a lack of fresh outside air, a high level of chemical/biological contaminants, and a high percentage of structure occupants complaining of health issues. Howard M. Sandler, Is the Great Indoors Making Workers Sick?, 57 Occupational Hazards, Oct. 1995, at 43.

[FN77]. Schillinger, supra note 73, at 9; see also Minner v. Am. Mortg. & Guar. Co., 791 A.2d 826, 845-46 (Del. 2002) (admissibility of various expert witnesses opinions addressing alleged health efforts due to building environmental conditions).

[FN78]. See Ira Kustin, Note, Limiting Architects' Liability for Indoor Air Pollution and Sick Building Syndrome, 7 N.Y.U. Envtl. L.J. 119, 130 (1999).

[FN79]. See Geisler, supra note 20, at 513 ("In 1973, the industrial world came to a rude awakening with the Organization of Petroleum Exporting Companies (OPEC) oil embargo."); see also Kustin, supra note 78, at 130.

[FN80]. See Krisandra Guidry, Sick Commercial Buildings: What Appraisers Need to Know, The Appraisal J., Jan. 2002, at 28 (noting that many existing buildings were renovated to conserve energy in the 1970s to meet new design specifications).

[FN81]. These containment measures have included sealed windows which reduce outside makeup air. See Zack Mansdorf, Indoor Air Quality: A Modern Dilemma, Occupational Hazards, Mar. 1993, at 61; see also Guidry, supra note 80, at 29 ("Cracks and crevices are tightly sealed to reduce the loss of air flow, extra heavy insulation is installed, and buildings have few, if any, windows that are operational.").

[FN82]. Kustin, supra note 78, at 130; see also Heady, supra note 72, at 1043; Theodore J. Passon, New and Emerging Pathogens, Part 6: Sick-Building Syndrome and Building-Related Illness, 28 Med. Laboratory Observer, July 1996, at 84 ("With the onset of the energy crisis in the 1970s, buildings (commercial, non-residential and residential) in advanced countries were constructed to be energy efficient with less air exchange between them and their surroundings.").

[FN83]. Heady, supra note 72, at 1044. Some structures were built during the 1970s and 1980s pursuant to an American Society of Heating, Refrigerating, and Air-Conditioning, Inc. ("ASHRAE") standard that required the distribution of less air per person to save energy. Final Report, supra note 46, at 8.

[FN84]. See Thomas K. Bick & Lisa G. Youngblood, The Pollution Exclusion Saga Continues: Does It Apply to Indoor Releases?, 5 S.C. Envtl. L.J. 119, 122 (1997) (discussing how a lack of ventilation traps contaminants inside the structure).

[FN85]. Bruce Bomier, Prescribing a Cure, Am. Sch. & U., June 1997, at 26.

[FN86]. Heady, supra note 72, at 1044 ("Reducing the introduction of outside air allowed the inside air to become stale and allowed contaminants that might otherwise be purged to become concentrated inside."). But see Joint Hearing, supra note 2, at 52 (prepared statement of Gerald M. Howard, National Association of Homebuilders). Howard states:

One common theory is that homes today are built "tighter" than in the past in an effort to make them more energy efficient and, as a result, homes do not dry out as quickly as they did in the past, therefore leading to mold growth. If this theory were

true, all new homes would be overrun with significant mold growth. However, this is not the case. While it is possible that in certain instances a home may be too tight and this may be a contributing factor in the growth of mold, it is impossible to make the case for the entire housing stock.
Id.

[FN87]. No federal regulatory program applies to air quality in private residential structures. Reitze & Carof, supra note 10, at 254.

[FN88]. The principle exceptions have been the requirements applicable to asbestos and lead-based paint. These materials were previously used in the construction of millions of structures. Id. at 255.

[FN89]. The principle federal statute is the Clean Air Act, 42 U.S.C. § § 7401-7671 (2000). This statute and its implementing regulations are examined in Walter G. Wright, Jr. & Mary Ellen Henry, The Arkansas Air Pollution Control Program: Past, Present and Future, 51 Ark. L. Rev. 227 (1998).

[FN90]. The EPA has opined that there is a two-part test for ambient air: whether the location is external to the building and whether it is accessible to the general public. See Letter from John S. Seitz, Office of Air Quality Management Standards, United States Environmental Protection Agency, to Daniel Gutman (Apr. 13, 1992) (on file with the Arkansas Law Review). The letter noted in relevant part:
Once indoors, air is no longer "external to buildings" and is thus not considered ambient air. Thus, except in very unusual situations, we would not consider air at open or operable windows, or at the intakes of mechanically-ventilated buildings, as ambient air for purposes of determining attainment of the national ambient air quality standards. States are free to interpret their own State ambient air quality standards in a more restrictive manner.
Id.

[FN91]. Of course, the reduction of air pollutants in the outside ambient air benefits the indoor environment. Reitze & Carof, supra note 10, at 254.

[FN92]. See Guiffrida, supra note 71, at 319-24 (discussing EPA indoor air pollution research and information dissemination). The statutes that might provide authority to address indoor contaminants are discussed in Reitze & Carof, supra note 10, at 254-59. An exception might be the Federal Clean Air Act National Emission Standards for Hazardous Air Pollutants ("NESHAP") for asbestos. 40 C.F.R. § § 61.140-61.157 (1997). The NESHAP regulates a variety of activities (i.e., renovation, demolition, etc.) involving asbestos that take place inside structures. 40 C.F.R. § § 61.140-61.157. Examples of CAA enforcement actions involving the asbestos NESHAP are United States v. Midwest Suspension & Brake, 824 F. Supp. 713 (E.D. Mich. 1993) and United States v. Trident Seafoods Corp., 60 F.3d 556 (9th Cir. 1995). Also note that some states have asbestos regulatory programs. For example, Arkansas has a set of standards that encompass certain forms of asbestos. This program is found in Arkansas Pollution Control & Ecology Commission Regulation No. 21. State asbestos regulations may vary in certain respects from the federal asbestos NESHAP.

[FN93]. See Kustin, supra note 78, at 139. However, this federal agency's authority is restricted to the workplace setting. See Guiffrida, supra note 71, at 332 (referencing OSHA standard-setting for toxic pollutants in the workplace). A detailed discussion of OSHA's applicability to indoor air contaminants is found at Reitze & Carof, supra note 10, at 258-63.

[FN94]. A discussion of the patchwork of regulations in place in the State of Maryland that provide some authority to address indoor issues is found in Final Report, supra note 46, at 15-16.

[FN95]. The air found in some structures may contain pollutants that would otherwise be addressed by the federal and state outdoor-air monitoring programs. See The Conservation Foundation, State of the Environment: An Assessment at Mid-Decade 104 (1984) ("Indoor-air-pollutant concentrations may exceed health-based standards established for outdoor air, regardless of actual outdoor concentrations.").

[FN96]. See R. Bruce Dickson, Regulation of Indoor Air Quality: The Last Frontier of Environmental Regulation, 9 Nat. Resources & Env't 20 (1994). The absence of federal efforts to address indoor air pollution has been criticized. See U.S. Gen. Accounting Office, Indoor Air Pollution: Federal Efforts are not Effectively Addressing a Growing problem (Pub. No. GAO/RCED-91- 8) (1991).

[FN97]. See Schillinger, supra note 73, at 9 (noting poor indoor air quality is a growing concern among office workers).

[FN98]. Indoor air quality has been cited as potentially contributing to the increased prevalence of allergies and asthma. Smedje & Norback, supra note 19, at 18. Other symptoms associated with poor indoor air quality include irritation, headaches, fatigue, and sinus congestion. Schillinger, supra note 73. These are symptoms that may be caused by factors other than indoor air quality. Id.

[FN99]. Germguard Sees Huge Untapped Market for Indoor Air Quality Control, The Star, Dec. 9, 2002 (referencing an EPA study).

[FN100]. See Joint Hearing, supra note 2, at 59 (prepared statement of Stephen C. Reed, M.D. Chief, Air Pollution and Respiratory Health Branch, Centers for Disease Control and Prevention, U.S. Department of Health and Human Services). Also included are mushrooms, mildews, and yeasts. Id.

[FN101]. Peña-Alfaro, supra note 4, at 554.

[FN102]. Id.; see also Harriet A. Burge & James A. Otten, Fungi, in Bioaerosols: Assessment and Control 19-5 (Janet Macher ed., 1999) ("Few places on earth are free of fungi."); Donald S. Orth, Microbiological Risk Assessment of New Materials: A Simple Tool for Identifying Microbial Contamination, Cosmetics and Toiletries, Nov. 1996, at 43 ("Bacteria, yeasts and molds are ubiquitous in nature.").

[FN103]. See Kurtis B. Neeg, Mold Litigation--It's Not Asbestos Deja Vu All Over Again, 17 Envtl. Compliance & Litig. Strategy, Nov. 2001, at 4 (citing a scientist who states mold makes up a significant percentage of the world's biological mass).

[FN104]. The term is also used to measure and report mold. Henning & Berman, supra note 7, at 81.

[FN105]. Peña-Alfaro, supra note 4, at 551. Not all molds have airborne spores. An example is Stachybotrys. Springston, supra note 58, at 146. It has sticky spores that are rarely airborne. Id.

[FN106]. Peña-Alfaro, supra note 4, at 551.

[FN107]. Dave Dolnick, "Toxic Mold" Part I: What is It? What Causes It? And Why Do We Keep Hearing About It?!, Constructor, Oct. 2001, at 13.

[FN108]. Id.

[FN109]. Springston, supra note 58, at 143.

[FN110]. Henning & Berman, supra note 7, at 81.

[FN111]. Id.

[FN112]. See Nadine M. Post, Containing Noxious Mold, Engineering News-Record, May 3, 1999, at 32. "There are microbe-contaminated surfaces everywhere in a building," says certified industrial hygienist, Patricia Ho Heinsohn, Senior Managing Scientist at Exponent, Menlo Park, California. Id. "It becomes an issue when there are high concentrations of mold spores in the air that degrade indoor air quality," she adds. Id.

[FN113]. See Joint Hearing, supra note 2, at 59 (prepared statement of Stephen C. Reed, M.D. Chief, Air Pollution and Respiratory Health Branch, Center for Disease Control and Prevention).

[FN114]. A comprehensive discussion of mold sources and dispersion is found in Burge & Otten, supra note 102.

[FN115]. See Moerdler, Insider's Outlook, supra note 9 (referencing 100,000 species of mold).

[FN116]. This greenish-black mold is often referred to as "Stacky." Peña-Alfaro, supra note 4, at 555; see also Liristis v. Am. Family Mut. Ins. Co., 61 P.3d 22, 24 (Ariz. Ct. App. 2002) (as amended and redesignated Dec. 26, 2002) (stating that Stachybotrys produces mycotoxins causing allergic reactions).

[FN117]. See Henning & Berman, supra note 7, at 81.

[FN118]. See John R. Hall, Educating Business about Mold, 216 Air Conditioning, Heating & Refrigeration News 9, 1 (2002). Mold also requires a surface for growth.

[FN119]. Henning & Berman, supra note 7, at 74.

[FN120]. Id.

[FN121]. The mold may become dormant. Peña-Alfaro, supra note 4, at 553. If the necessary conditions reoccur, the mold may regenerate. Id.

[FN122]. Henning & Berman, supra note 7, at 74 ("Many building materials provide a perfect food source for mold, meaning that the addition of a water source is all that is necessary to provide the environment for mold growth.").

[FN123]. "Still, 'there is a fundamental misunderstanding about mold problems in a building,' says Joseph W. Lestiburke, a consulting engineer-principal with Building Science Corp., Westford, Mass. 'It's not a mold problem, it's a water problem,' he adds." Post, supra note 112, at 32.

[FN124]. See Joint Hearing, supra note 2, at 51 (prepared statement of Gerald M. Howard, Executive Vice President, National Association of Home Builders) (noting that "the only growth factor that can be controlled is moisture").

[FN125]. Id.

[FN126]. What Features Are in the Ideal Learning Environment?, Sch. Plan. & Mgmt., May 1, 2001, at 37 ("When mold and mildew exist, it is obvious that you are faced with a moisture problem.").

[FN127]. Henning & Berman, supra note 7, at 80.

[FN128]. Id.

[FN129]. Two authors note: "Fungi appear on materials in a particular succession according to their minimum moisture demands: primary colonizers, Penicillium sp. and Aspergillus sp., arise first, then secondary colonizers such as Cladosporium sp., and finally tertiary colonizers, such as species of Stachybotrys." John A. Tiffany & Howard A. Bader, Detection of Stachybotrys Chartarum: The Effectiveness of Culturable-Air Sampling and Other Methods, 62 J. Envtl. Health, May 1, 2000, at 9.

[FN130]. For example, one commentator described a structure in which mold growth was tied to a defective HVAC system that released water. Nakano, supra note 6.

[FN131]. See ColumbiaKnit, Inc. v. Affiliated FM Ins. Co., No. CIV. 98- 434-HU, 1999 WL 619100 (D. Or. Aug. 4, 1999) (referencing rainwater intrusion and water leaks resulting in microbial reservoirs and microbial amplification).

[FN132]. Prudential Prop. & Cas. Ins. Co. v. Lillard-Roberts, No. CV-01- 1362-ST, 2002 WL 31495830 (D. Or. June 18, 2002) (concerning a house plumbing system failure that flooded the main floor).

[FN133]. See Miller v. Lakeside Vill. Condo. Ass'n, Inc., 2 Cal. Rptr. 2d 796 (Cal. Ct. App. 1991) (concerning allegations that a condominium became mold infested after flooding caused by faulty plumbing); CitiFinancial Mortgage Co. v. Skyers, No. CV023894195, 2003 WL 1227638 (Conn. Super. Ct. Feb. 27, 2003) (concerning a successful bidder for a small office structure who argued for a reduction in price due to mold growth caused by burst pipe).

[FN134]. See Ins. Co. of N. Am. v. Snyder Moving & Storage, Inc., No. CV-98-01278-HRH, 2002 WL 31748606 (9th Cir. Dec. 6, 2002) (referencing mold and mildew damage related to flooding of structure); Mondelli v. Kendall Homes Corp., 631 N.W.2d 846, 852 (Neb. 2001) (concerning allegations that surface water and rainwater leaked through the exterior of the house into the interior).

[FN135]. See Lexington Ins. Co. v. Unity/Waterford-Fair Oaks, Ltd., No. CIV.A. 399CV1623D, 2002 WL 356756, at *1 (N.D. Tex. March 5, 2002) (referencing mold allegedly caused by flooding associated with severe rainstorm).

[FN136]. See Farnsworth v. Horrigan, No. CV 950373914S, 1999 WL 49393 (Conn. Super. Ct. Jan. 22, 1999) (concerning an allegation that the construction of a structure in a flood plain resulted in water seepage and associated mold spores). The construction of structures in some wetlands, flood plains, or similar areas will presumably increase the possibility of infiltration unless appropriate protective measures are undertaken.

[FN137]. Lambs' Farm Int'l, Inc. v. N. Ins. Co., No. 02 C6055, 2003 WL 260683 (N.D. Ill. Feb. 6, 2003) (referencing a building which sustained water damage and subsequent mold growth because of a large rainfall event).

[FN138]. See Dick v. Pac. Heights Townhouses, No. SCV-7526, 2002 WL 31117253 (Cal. App. Dep't Super. Ct. Sept. 25, 2002) (concerning a garage built into a slope that sometimes sustained water damage facilitating mold growth).

[FN139]. Booker, 2002 WL 117987, at *1-*2 (concerning an allegation that construction defects allowed water seepage around doors and windows facilitating mold growth).

[FN140]. See Dilello v. Katnik Corp., Nos. B146979, B153414, 2002 WL 31839383 (Cal. App. Dep't Super. Ct. Dec. 19, 2002) (concerning a source of mold in a home stated to be water intrusion from drainage problems and leaking windows); Centrex-Rooney Constr. Co. v. Martin County, Fla., 706 So. 2d 20, 25 (Fla. 1997) (concerning a subcontractor's defective installation of windows that led to extensive water infiltration resulting in mold growth).

[FN141]. See Prudential Prop. & Cas. Ins., 2002 WL 31974401, at *1 (concerning an insurance adjuster who concluded that defective flashing around a dormer and chimney facilitated water intrusion).

[FN142]. See Thompson v. Fireman's Fund Ins. Co., No. B149380, 2002 WL 1573480 (Cal. Ct. App. July 16, 2002).

[FN143]. See Blaine Constr. Corp. v. Ins. Co. of N. Am., 171 F.3d. 343, 345 (6th Cir. 1999) (concerning humidity and resulting condensation that was deemed a secondary factor in growth of mold in structure).

[FN144]. See F. Guenther, IAQ and Noise Control: Working Together, Heating, Piping, Air Conditioning, Jan. 1996, at 59 (referencing ASHRAE standard which states that if relative humidity in occupied spaces exceeds 70%, fungal contamination can occur). Mold's preference for relatively humid conditions has led some to believe more humid climates may be more susceptible to such growth. Henning & Berman, supra note 7, at 80.

[FN145]. Bomier, supra note 85, at 28.

[FN146]. Dolnick, supra note 107, at 14 (stating that many construction materials contain enough organic material to facilitate mold growth).

[FN147]. Id.

[FN148]. See Tulacz, supra note 8, at 44 (referencing the gypsum industry's work to develop mold or moisture resistant gypsum and drywall products).

[FN149]. Peña-Alfaro, supra note 4, at 556; see also Jerry J. Tulis & Wayne R. Thomann, Fungal Contamination and Growth in Heating-Cooling Ventilation Systems, Air Conditioning, Heating & Refrigeration News, Aug. 11, 1997, at 21 ("It is important to recognize that everyone is continuously exposed, primarily through inhalation, to fungal contaminants at varying concentrations, whether outdoors or indoors.").

[FN150]. Nakano, supra note 6, at 12.

[FN151]. Peña-Alfaro, supra note 4, at 556-57 (noting that those sensitive to mold would include individuals with immune deficiencies, lung disease, infants, elderly, and pregnant women); see also Miller, 2 Cal. Rptr. 2d at 798 (discussing individual diagnosed as being highly allergic to pollens and mold); Henning & Berman, supra note 7, at 80 (stating that mold in large quantities can cause allergic symptoms similar to exposure to pollen); John Payne et al., Latest Developments in Exposure Litigation, 17 Nat. Resources & Envt. 132 (2002) (noting credible sources reporting an association between minor conditions and subjective mold exposure).

[FN152]. Henning & Berman, supra note 7, at 83. The potential health effects associated with mold are discussed in Tracy P. B. Varghese, Note, Proliferation of Mold and Toxic Mold Litigation: What is Safe Exposure to Airborne Fungi Spores Indoors?, 8 Envtl. Law. 389, 391-92 (2002).

[FN153]. A reference to an individual is found in Lillard-Roberts, 2002 WL 31495830, at *1 (concerning an occupant of a home with mold issues who was diagnosed with systemic fungal disease).

[FN154]. Id. (referencing the plaintiff's hypersensitivity to mold spores); see also Springston, supra note 58, 143 (referencing a percentage of the population whose immune system may suffer allergic reactions to even small amounts of an allergen).

[FN155]. Peña-Alfaro, supra note 4, at 554.

[FN156]. For example, Stachybotrys chartarum has been stated to be associated with the toxic secondary metabolites macrocyclic, trichoakecenes, and serotoxins. See Tiffany & Bader, supra note 129, at 9.

[FN157]. The Art of Aspergillus and Penicillin Speciation, 64 J. Envtl. Health 40 (2001).

[FN158]. See Peña-Alfaro, supra note 4, at 558-60.

[FN159]. See Payne et al., supra note 151, at 132 (stating that researchers have almost uniformly agreed that credible scientific study has established to a reasonable certainty that the inhalation of mold or its metabolites in an indoor environment causes serious illness in human beings). A summary of the National Centers for Disease Control and Prevention research efforts on the health problems associated with mold is found in Joint Hearing, supra note 2, at 57-68 (prepared statement of Stephen C. Reed, M.D. Chief, Air Pollution and Respiratory Health Branch, National Center for Environmental Health, Centers for Disease Control and Prevention).

[FN160]. Nakano, supra note 6, at 12.

[FN161]. Henning & Berman, supra note 7, at 84; see also Field Guide for the Determination of Biological Contaminants in Environmental Samples 21 (H. Kenneth Dillon et al. eds., 1996) [hereinafter Field Guide] (noting that exposures to microbes and antigens primarily occur by inhalation of aerosolized materials).

[FN162]. Allison v. Fire Ins. Exch., 98 S.W.3d 227 (Tex. Ct. App. 2002) (discussing whether the plaintiff established a reliable foundation for admission of causation evidence involving alleged impact of mold on house occupants); Dick, 2002 WL 31117253 (concerning a dispute over whether a lessee's physical ailments were caused by mold present in the leasehold).

[FN163]. Environmental assessments are addressed in Healy & Hacker, supra note 53; Eric Rothenberg et al., Environmental Issues in Business Transactions Under U.S. Law, 5 Wis. Envtl. L.J. 121 (1998); Ram Sundor & Bea Grossman, The Importance of Due Diligence In Commercial Transactions; Avoiding CERCLA Liability, 7 Fordham Envtl. L.J. 351 (1996).

[FN164]. See Healy & Hacker, supra note 53, at 99-105.

[FN165]. One author notes:
Many financial institutions, particularly large national banking institutions, have adopted environmental site assessment procedures which must be followed in connection with the making of loans on commercial and industrial property. These

procedures are detailed and compliance should provide a fair degree of comfort that the "all appropriate inquiry" requirement has been satisfied.
Efflandt, supra note 50, at 40. The secondary mortgage market has required that environmental risk programs be established by lenders from which it buys mortgages. See Ann M. Burkhart, Lenders and Land, 64 Mo. L. Rev. 249, 301 (1999).

[FN166]. An important example is the innocent landowner provision of the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"). See 42 U.S.C. § § 9601-9675 (2000). The 2001 amendments to CERCLA clarified what type of due diligence is necessary to qualify for this liability exemption. See Small Business Liability and Brownfield's Revitalization Act of 2001, Pub. L. No. 107-118, 115 Stat. 2356 (2002). The amendments require EPA to specify the investigation that must be undertaken prior to the acquisition of the property. Id. These amendments are discussed in Jeffrey Kodish, Restoring Inactive and Abandoned Mine Sites: A Guide to Managing Environmental Liabilities, 17 J. Envtl. L. & Litig. 257 (2002); Andrew S. Levine, The Brownfields Revitalization and Environmental Restoration Act of 2001: The Benefits and the Limitations, 13 Vill. Envtl. L.J. 217 (2002).

[FN167]. See Standard Questionnaire, supra note 49, at 12 (discussing the absence of mold-screening formats and baselines).

[FN168]. For example, an American Society of Testing Materials ("ASTM") committee is developing a mold-screening standard for buildings. This screening standard will presumably enable the user to determine whether more extensive efforts involving sampling might be needed. See id. ASTM is a private standard-setting organization that has developed several standard practice guides for environmental site assessments for commercial real estate. The organization develops standards through various committees comprised of representatives with different interests. See Jody Freeman, The Private Role in Public Governance, 75 N.Y.U. L. Rev. 543, 642 (2002). The ASTM organization has a central staff to monitor the work and an appeals process to ensure compliance with the organization's procedures. Id.

[FN169]. Reinstalling these materials or equipment requires someone to affirmatively act. The chances of a party intentionally violating a transactional covenant and placing friable asbestos or a heating oil tank on the property is unlikely.

[FN170]. Most environmental contaminants or conditions are created by or generated as a result of human activity. However, there are other natural "contaminants." For example, radon gas is a potential indoor environmental pollutant that is naturally occurring. See Carolyn Marie Shuko, Comment, Radon Gas: Contractor Liability for an Indoor Health Hazard, 12 Am. J. L. & Med. 241 (1986). It is found in the subsurface in rocks such as granite, shale, and limestone. Id. at 242; see also Anne Rickard Jackowitz, Comment, Radon's Radioactive Ramifications: How Federal and State Governments Should Address the Problem, 16 B.C. Envtl. Aff. L. Rev. 329 (1988); Jeanne Prussman, Comment, The Radon Riddle: Landlord Liability for a Natural Hazard, 18 B.C. Envtl. Aff. L. Rev. 715 (1991).

[FN171]. See Tulacz, supra note 8, at 65 ("But mold isn't something you introduce into a building, and it isn't something you can remove once and then it's gone for good.").

[FN172]. See, e.g., Hodgson, Russ, Andrews, Woods & Goodyear, LLP v. Isolatek Int'l Corp., 752 N.Y.S.2d 767 (N.Y. App. Div. 2002). Mold was found in waterproofing on two floors of a building being renovated. Id. at 768. Remedial measures were undertaken to eliminate the mold. Id. However, mold was subsequently discovered in the previously remediated areas of the building. Id.

[FN173]. An engineer notes: "You've got to get rid of the cause. If you don't, and you get rid of only the amplification site, I guarantee that within six weeks, you'll have the mold growth back." Post, supra note 112, at 32.

[FN174]. The absence of governmental regulatory requirements differentiates mold in the transactional context from many other environmental issues. For example, a potential purchaser or lessee would not need to be as concerned about the possibility that certain environmental statutes might impose responsibility on them for contamination that is present at the time of the acquisition or lease of the structure. Also, transactional environmental assessments pose a risk to the facility owner or operator because they may identify environmental conditions or regulatory violations that governmental programs require be reported to an agency. See James R. Arnold, Disclosure of Environmental Liabilities to Governmental Agencies and Third Parties, CA47 ALI-ABA Course of Study 381 (1995); Arnold W. Reitze, Jr. & Lee D. Hoffman, Self-Reporting and Self-Monitoring Requirements Under Environmental Laws, 1 Envtl. Law. 681 (1995); Arnold W. Reitze & Steve Schell, Reporting Requirements for Nonroutine Hazardous Pollutant Releases Under Federal Environmental Laws, 5 Envtl. Law. 1

(1998). The absence of applicable governmental requirements means the assessment of mold will not typically trigger such self-executing governmental mandates. Instead, the principal legal concerns associated with structural mold are common-law liabilities.

[FN175]. This term generally refers to the concentration of a substance in the air to which exposure over a particular period of time causes adverse health effects.

[FN176]. See Mondelli v. Kendell Homes Corp., 631 N.W.2d 846, 854-55 (Neb. 2001) (citing plaintiff's expert witness who notes an absence of state regulations and industry standards concerning indoor air quality).

[FN177]. Schillinger, supra note 73, at 13. The measures might include culturable fungi, total fungal spore counts, and fungal volatile organic compound concentrations. Id.

[FN178]. For example, federal standards of closure criteria have been promulgated for hazardous waste management facilities at 40 C.F.R § § 264.110-.120 (establishing closure standards and procedures for hazardous waste treatment, storage, and disposal facilities); petroleum underground storage tanks at 40 C.F.R. § 280.66 (establishing corrective action plan requirements); and polychlorinated biphenyls ("PCBs") at 40 C.F.R. § § 761.1-.398 (regulating PCBs).

[FN179]. 40 C.F.R. § § 761.1-.398; see also James A. Vroman, Disposal and Remediation Under the PCB Mega Rule, 29 Envtl. L. Rep. 10459 (1999).

[FN180]. Certain Federal Clean Air Act regulations impose management standards on asbestos if it is "friable." See 40 C.F.R. § 141. These regulations classify asbestos as "friable" if it will crumble by hand when dry. 40 C.F.R. § 141.

[FN181]. This has not always been true. Over a decade ago, the EPA and most states provided little guidance as to the appropriate cleanup criteria or action levels for various types of properties (industrial, commercial, residential, etc.) unless they were engaged in certain activities such as hazardous waste management. See 40 C.F.R. § § 264.110-.120 (providing closure standards and procedures for certain hazardous waste treatment, storage, and disposal facilities), petroleum UST; see also 40 C.F.R. § 280.66 (corrective action plan requirements) 40 C.F.R. § 761.1-.398 (1999). The regulations addressing PCBs were the subject of extensive revisions in 1998. Disposal of Polychlorinated Biphenyls, Final Rule, 63 Fed. Reg. 35,383 (June 29, 1998). The PCB rule regulations include cleanup standards for various surfaces such as steel pipe, iron plating, etc. See generally Vroman, supra note 179 (discussing friable asbestos, etc.). In recent years, various federal and state programs have begun using risk-based corrective action or remediation standards which tailor cleanup levels according to site-specific factors. The standards may be found in a statute, regulation, or policy. See U.S. Gen. Accounting Office, Superfund--How States Establish and Apply Environmental Standards When Cleaning up Sites, Pub. No. GAO/RCED -96-70FS (1996). The various programs often take into account factors such as to what extent the site is accessible and/or the future land use. Memorandum from Elliot P. Laws, Assistant Administrator, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response ("OSWER") to Regional Directors of the U.S. Environmental Protection Agency (May 25, 1995) (on file with EPA, OSWER) (OSWER Directive No. 9355.7-04, Land Use in the CERCLA Remedy Selection Process) 1996 WL 278957; see also Laurie DeBrie Thanheiser, The Allure of a Lure: Proposed Federal Land Use Restriction Easements in Remediation of Contaminated Property, 24 B.C. Envtl. AFF. L. Rev. 271 (1997) (noting the role of institutional controls and land use restrictions in CERCLA program). Typically, superimposed upon these various procedures or site specific analyses is a requirement that the resulting standards be protective of human health and the environment. Note that risk-based standards are not universally favored. See Victor B. Flatt, Essay: "[H]e Should at His Peril Keep It There . . .": How the Common Law Tells Us that Risk Based Corrective Action is Wrong, 76 Notre Dame L. Rev. 341 (2001).

[FN182]. Walter G. Wright, Jr. & Travis J. Morrissey, Arkansas Facility/Real Property Redevelopment in the Year 2000: Tools Available to Resolve Environmental Issues, 52 Ark. L. Rev. 751, 785 (2000); see also Heidi Gorovitz Robertson, Legislative Innovation in State Brownsfields Redevelopment Programs, 16 J. Envtl. L. & Litig. 1 (2001) (describing various state approaches for setting cleanup standards based on criteria such as proposed future property uses).

[FN183]. For example, a court referenced a report which compared the number of spores in the house to the adjacent outdoor environment. See Dilello v. Katnik Corp., Nos. B146979, B153414, BC190094, 2002 WL 31839383 (Cal. Ct. App. Dec. 19, 2002); see also Mondelli v. Kendel Homes Corp., 631 N.W.2d 846 (Neb. 2001) (concerning plaintiff's expert in damage

action who opines that the indoor air quality concentration for total mold spores should be 25% of outside concentration during the summer). The absence of standards might also pose a problem for the insurance underwriting and claims process. Underwriters use standards to establish the risks related to properties. Standards may also be used by the insurance company in determining the adequacy of remediation. Such standards might better enable the adjuster or claims processor to determine whether health risks to the policy holder have been eliminated.

[FN184]. See Field Guide, supra note 161, at 2 (noting sampling for biological contaminants in the indoor or outdoor environment is not as straight forward as sampling for chemical agents that are not of biological origin).

[FN185]. See Mondelli, 631 N.W. 2d at 854 (referencing the absence of governmental or industry indoor air quality standards). The absence of standards has also been stated to increase remediation costs. See Trader, supra note 37, at 13 (stating that absence of standards may lead to remediation efforts that may be beyond reasonable).

[FN186]. See Joint Hearing, supra note 2, at 51 (prepared statement of Gerald M. Howard, Executive Vice President, National Association of Home Builders). In other words, mold is ubiquitous in the environment. Id.

[FN187]. An example of such an analysis is a report referenced in Dilello, 2002 WL 31839383, at *1 ("In this case, . . . interior mold levels were 2,000% to 5,000% of the levels found outdoors.").

[FN188]. See Mansdorf, supra note 81, at 11 (stating that the presence of higher indoor populations of microorganisms than outdoors does not mean an occupant will become ill).

[FN189]. Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health & Mental Hygiene Bureau of Environmental & Occupational Disease Epidemiology, § 2.1 (2001), available at http://www.ci.nyc.ny.us/html/doh/html/epi/moldrpt1.html [hereinafter Guidelines] (noting visual inspection is the most important initial step in identifying a possible contamination problem).

[FN190]. See Henning & Berman, supra note 7; Nakano, supra note 6.

[FN191]. These private party environmental due diligence activities arguably support government enforcement by driving properties toward greater environmental compliance or cleanliness. One author notes in the lender context:
In an attempt to avoid such liability, lenders now bear the burdens of conducting environmental inspections of lands offered as collateral and of requiring borrowers to correct any environmental violations before a loan will be made. In these ways, government has conscripted lenders to enforce the environmental laws, as well as to help fund environmental cleanups.
Burkhart, supra note 165, at 298.

[FN192]. Mattison & Widmanny, supra note 52, at 10366.

[FN193]. The term "Phase I" is often used to denote an initial environmental assessment. See S. Indus. Leasing, LLC v. Ingersoll-Rand Co., No. 02 C4528, 2003 WL 223436, at *8 (N.D. Ill. Jan. 31, 2003) (referring to "Phase I Environmental Survey" prepared by seller in the context of sale of an industrial facility). An assessment will only be considered "ASTM" if it includes the tasks specified in that standard. The standard was established in 1992. Telephone Interview with Thomas P. Jones, Pollution Management, Inc. (Nov. 7, 2002) [hereinafter Interview with Jones]. This may be particularly important if the structure will be a single or multi-family residential facility. Id.; see also Robert A. Jackson, The New Standard in Environmental Assessments, Risk Mgmt. Assoc. J., Aug. 27, 2001, at 54-55.

[FN194]. Mattison & Widmanny, supra note 52, at 10366.

[FN195]. Id.

[FN196]. Id.

[FN197]. Interview with Jones, supra note 193; see also Sweeney & Taddeo, supra note 3, at 77 (noting the identification of mold is not typically encompassed by a Phase I Environmental Site Assessment).

[FN198]. See Moerdler, Insider's Outlook, supra note 9, at 30 (referencing a revision of transactional due diligence checklists to include mold). Assessments are often expanded to include other indoor contaminant such as asbestos, lead-based paint, and radon. Id.

[FN199]. See Standard Questionnaire, supra note 49, at 12.

[FN200]. Structure owners or managers do not always undertake assessment activities in a systematic manner. See Henning & Berman, supra note 7, at 75 (stating that the response to mold-related claims in schools may be panic and wholesale testing of all areas).

[FN201]. See Standard Questionnaire, supra note 49, at 12.

[FN202]. Id.

[FN203]. The protocol would be denominated in the "Standard Practice for Transactional Screening Readily Observable Mold in Commercial Buildings." Id.

[FN204]. Id.

[FN205]. Id.

[FN206]. See Michael Logsdon, The Securitization Advantage of Indoor Air Quality Assessment: Focus on: Banking and Financing, Real Est. Wkly., May 21, 1997, at S8. The article notes:

The scope of this investigation need not include expensive and time-consuming sampling. In fact, a time and cost effective IAQ screening program can easily be appended to the already required Phase I Environmental Site Assessment (EAS) or Property Conditions Survey (PCS) scope of work.

Such a screening program should consist of two simple parts. First, a trained environmental or engineering professional should conduct a visual assessment for obvious indicators such as evidence of moisture damage, stained surfaces, poor HVAC maintenance, etc. During the course of this assessment, limited field measurements of temperature, humidity, carbon monoxide, and carbon dioxide can be taken. The assessor can then complete a checklist developed to flag noticeable IAQ problem indicators and reports of previous incidents of building-related illness.

Once gathered, this data should be sufficient to enable a qualified consultant to determine if potential risk exists.

Id.

[FN207]. See id. These conditions might include flooding, leaks, drips, HVAC problems, etc.

[FN208]. The sense of smell may also be used to detect a mold problem. Certain odors may be an indication of the presence of significant amounts of mold. See Miller v. Lakeside Vill. Condo. Inc., 1 Cal. App. 4th 1611 (Cal. Ct. App. 1991) (referencing a musty smell in condominium unit that led to a search for mold). Various molds emit low molecular weight compounds. Daniel Karpen, What Occupants Smell When They Say, 'My Building Stinks!,' Air Conditioning, Heating & Refrigeration News, Apr. 12, 1999, at 46. These emissions may be generated in sufficient quantity to produce objectionable smells in structures. Id.

[FN209]. The colors can include white, orange, green, brown, and black. Peña-Alfaro, supra note 4, at 552.

[FN210]. Id. at 551; see also American Industrial Hygiene Association, Report of the Microbial Growth Task Force 18 (May 2001) [hereinafter Growth Task Force]. Areas that may receive particular attention include the floor and corners of the building.

[FN211]. Growth Task Force, supra note 210, at 18 (noting that mold may begin to grow within a wall if the source of moisture is leakage through the building envelope).

[FN212]. This type of inspection is sometimes denominated "destructive testing." See Thompson v. Fireman's Fund Ins. Co., BC 215304, 2002 WL 1573480, at *6 (Cal. Ct. App. Jul. 16, 2002). It may involve breaking open walls. Id.

[FN213]. The New York Department of Health has discussed the scope of visual inspections in a guidance document. The agency notes in relevant part:

Ventilation systems should be visually checked, particularly for damp filters, but also for damp conditions elsewhere in the system and overall cleanliness. Ceiling tiles, gypsum wallboard (sheetrock), cardboard, paper, and other cellulosic surfaces should be given careful attention during a visual inspection. The use of equipment such as a boroscope, to view spaces in ductwork or behind walls, or a moisture meter, to detect moisture in building materials, may be helpful in identifying hidden sources of fungal growth and the extent of water damage.

Guidelines, supra note 189, § 2.1.

[FN214]. The HVAC systems are presumably evaluated as part of the general structure appraisal/inspection activities. The assessing party may need to ensure that the personnel/contractors undertaking this work are sensitive to these aspects of HVAC systems. Further, the assessing party will need the personnel/contractors undertaking the inspection of HVAC systems to share relevant information with those conducting the environmental due diligence. Of course, the same should be true for other potential conditions that can facilitate mold growth such as faulty plumbing, leaking roofs, etc. See Kannerick, supra note 59, at 23 (referencing the inspection of heating and ventilation systems as part of mold management program).

[FN215]. For example, is a wallboard water stain evidence of a historical release (that has since been corrected), or is the release likely to recur?

[FN216]. Field Guide, supra note 161, at 5. The principal fungi sample analysis methods include isolation of fungi by laboratory culture and microscopic examination of fungal cultures and individual fungal spores. Burge & Otten, supra note 102, at 19-8.

[FN217]. Data quality issues associated with environmental sampling are addressed to some extent in A. Dallas Wait, Environmental Forensic Chemistry and Sound Science in the Courtroom, 12 Fordham Envtl. L. J. 293 (2001). For example, the minimum concentrations of viable aerosols in the air that can be detected varies with the type of sampling device utilized. Field Guide, supra note 161, at 43.

[FN218]. Schillinger, supra note 73. The three types of air sampling described by an American Industrial Hygienists publication include: quiescent (samples are collected under normal circumstances), semi-aggressive (dust stirred up in reservoirs to stimulate normal occupant activities), or aggressive (attempt to vigorously disturb reservoirs to establish bio-contaminant source). Field Guide, supra note 160, at 5.

[FN219]. See, e.g., Dilello, 2002 WL 31839383, at *1 (referencing a mold sampling that compared conditions in a structure and the adjacent outside environment); Jensen v. Amgen, Inc., 129 Cal. Rptr. 2d 899, 901 (Cal. Ct. App. 2003) (referencing a sampling which reflected airborne levels of mold that were lower in the building than outside).

[FN220]. Some parties may be reluctant to undertake air sampling in occupied structures. An example might be a lessor. The reluctance may be based on lessee disclosure issues. For example, the lessor might be concerned as to whether there is a common-law duty to provide the results of such sampling to the lessee. In addition, there may be concerns that the lessee will misinterpret the results.

[FN221]. Different types of mold are associated with certain building materials. Also, certain types of mold require larger amounts of water to grow. Therefore, the identification of such spores may indicate that a leak or other source of water is present in the structure. For example, the fungi S. chartarum requires sustained wet wood or other cellulose based material to be present. Field Guide, supra note 161, at 40. Other species may be found in flooding water (Fusarium manilifome) or on damp wood or cellulose (Aspergillus versicolor). Id.

[FN222]. This raises an important question. Should a party gather information about occupant/tenant indoor air quality complaints as part of due diligence? A history of credible occupant/tenant complaints concerning the illnesses allegedly associated with the property's indoor air quality may be an important criterion in determining whether to move beyond the visual inspection. Documents regarding such complaints may be readily available.

[FN223]. For example, see Tiffany & Bader, supra note 129 (noting that because Stachybotrys chartarum does not readily become airborne, swabs, bulk, and spore trap samples may be needed in addition to air samples to adequately characterize the

structural presence of this mold).

[FN224]. See Springston, supra note 58, at 144.

[FN225]. Id. Fungal concentrations may also vary by season. Schillinger, supra note 73, at 13.

[FN226]. See Chih-Shan Li et al., Fungus Allergens Inside and Outside the Residence of Atopic and Control Children, 50 Archives of Envtl. Health 38, 38 (1995) (referencing studies that found significant seasonal variations of airborne fungus).

[FN227]. See Rosa Codina & Richard F. Lockey, Environmental Asthma: Nine Questions Physicians Ask, Consultant, Jan. 2000, at 66 (noting outdoor mold is the principal allergen associated with asthma in Arizona and Central Australia).

[FN228]. The need to compare inside and outside concentrations may be unique to mold. A similar comparison is obviously not necessary for non-natural substances such as asbestos. Asbestos fibers will not normally be found in the ambient air outside a structure.

[FN229]. Field Guide, supra note 161, at 2 ("A universally accepted premise supported by health professionals is that the primary utility of viable sampling methods, especially those for fungi is the assessment and comparison of the biodiversity of contaminated areas indoors to the biodiversity of uncontaminated areas indoors and to the bio-diversity outdoors."); see also Dilello, 2002 WL 31839383, at *1 (comparing mold concentrations in a structure and the adjacent outside environment); ColumbiaKnit, Inc. v. Affiliated FM Ins. Co., No. CIV. 98-434-HU, 1999 WL 619100 (D. Or. Aug. 4, 1999) (sampling of boxes in building indicated elevated levels of fungal concentrations compared to outside air); Burge & Otten, supra note 102, at 19- 12 ("If fungal concentrations indoors are consistently higher than those outdoors, then indoor sources are indicated."); Springston, supra note 58, at 148 ("Since these are not generally accepted guidelines to follow regarding airborne fungi, indoor results must be interpreted with respect to the control samples.").

[FN230]. The placement of sampling points would presumably need to be outside the influence of the structure to ensure they are representative of the area.

[FN231]. See Springston, supra note 58, at 148 ("In general, mechanically ventilated buildings should have indoor fungal counts that are lower than those found outside."); Tulis & Thomann, supra note 149, at 21 (citing proposed guidelines suggesting that concentrations of mold spores in indoor air should be less than one-third of the respective outdoor concentration).

[FN232]. See, e.g., ColumbiaKnit, 1999 WL 619100 (noting that sampling indicated levels of mold species Penicillium was higher in structure than normally found outdoors); Tiffany & Bader, supra note 129, at 9-10 (stating that the presence of Stachybotrys chartarum in a structure is an indication that mold growth is affecting the quality of indoor environments since this mold is not commonly found in the outdoors).

[FN233]. See Springston, supra note 58, at 148 (noting that species found inside the structure should be similar to those found outside).

[FN234]. Id.

[FN235]. The universal presence of mold should be considered when interpreting swab or surface sample results. A discussion of this issue in the context of sampling HVAC surfaces notes in relevant part:

Accordingly, it is imperative that the mere presence of fungal spores along surfaces of the ventilation system not be incorrectly interpreted as growth. Therefore, the practice of taking swab samples of surfaces, using bulk samples, or exposing contact plates to contaminated surfaces, with subsequent incubation and laboratory analysis, must not be used for evidence of in situ growth. This practice will provide erroneous information, leading to a gross misrepresentation of actual conditions within the HVAC system, thereby often leading to unnecessary concerns and associated costly testing and remediation.
Tulis & Thomann, supra note 149, at 21.

[FN236]. "Bulk samples" are collected from visibly moldy surfaces by scraping or cutting. "Surface samples" are usually collected by wiping a measured area with a sterile swab or stripping the suspect area. Guidelines, supra note 189, § 2.2.

[FN237]. Id.

[FN238]. Henning & Berman, supra note 7, at 80.

[FN239]. See Joe Provey, Fresh Air; Indoor Air, Popular Mechanics, Sept., 2001, at 84.

[FN240]. Guidelines, supra note 189, § 3. The protection of the health of the workers performing the work is included within this objective. Id. Whether conditions at a facility warrant remediation is often determined by the application of standards issued by the government or a credible private organization.

[FN241]. Id.

[FN242]. Id.

[FN243]. Id.

[FN244]. Guidelines, supra note 189, § 3.

[FN245]. See Isolatek Int'l Corp., 752 N.Y.S.2d at 768 (describing the destruction of components of two floors of a building after mold growth reoccurred in previously remediated areas).

[FN246]. See Elementary Sch. Bldg. Comm. v. Placko, No. CV- 020398162S, 2003 WL 971839, at *1 (Conn. Super. Ct. Feb. 21, 2003) (referencing a school destroyed because of presence of mold).

[FN247]. The varying susceptibility of individuals to mold allergens renders the setting of health-based standards a challenge. See Peña-Alfaro, supra note 4, at 565. Federal legislation introduced in the 107th Congress included provisions requiring the establishment of health-based mold standards. See United States Toxic Mold Safety and Protection Act, H.R. 5040, 107th Cong. (2002) (unenacted).

[FN248]. A number of standards or policies have been issued that are relevant to, but not specifically applicable to, mold. An example might be standards issued by ASHRAE. ASHRAE Standard 60-2001 Ventilation for Acceptable Indoor Air Quality specifies minimum acceptable ventilation rates for various buildings. Final Report, supra note 46, at 7. ASHRAE Standard 55-1992 addresses thermal environmental conditions for human occupancy. Id. at 16. Ventilation air plays an important role in removing or diluting indoor air contaminants. Id. For example, Standard 62-2001 recommends twenty cubic feet per minute of outside air per person in an office building. Id. An American Institute of Hygienists Association publication provides guidelines for comparing biodiversity between the structure and outdoor environment. Field Guide, supra note 161, at 58-59. ASHRAE is a professional organization that recommends standards addressing ventilation and associated topics. Heady, supra note 72, at 1044.

[FN249]. Kannerick, supra note 59, at 23; see also Dehmler, supra note 6, at 17 ("Preventing mold growth is the best and most cost-effective way to deal with this problem.").

[FN250]. For example, ensuring that an HVAC's pan does not overflow may be as important as complex environmental controls. Nakano, supra note 6.

[FN251]. See What Features Are in the Learning Environment?, Sch. Plan. & Mgmt., May 1, 2001, at 37.

[FN252]. Heady, supra note 72, at 1056-57 (noting lack of cleaning and maintenance of HVAC system contributes to microbial contamination); see also Guiffrida, supra note 71, at 318 (stating microbiologic contaminants can be controlled through regular cleaning and maintenance of ventilation systems); Final Report, supra note 46, at 9 (noting that insulation of HVAC chilled water pipes can minimize sweating, thereby reducing its possible contribution to mold growth).

[FN253]. John R. Hall, Educating Business about Mold, Air Conditioning, Heating & Refrigeration News, July 1, 2002, at 1.

[FN254]. Dolnick, supra note 107, at 16.

[FN255]. For example, the American Society of Safety Engineers commented on proposed federal legislation: "Much of the evidence indicated that the primary cause of mold is moisture being trapped in buildings, the result of either existing construction standards not being followed or construction standards not being adequate to prevent mold." See Letter from Mark D. Hansen, P.E., CSP, President, American Society of Safety Engineers, to Honorable John Conyers, Jr., U.S. House of Representatives, Comments on the "United States Toxic Mold Safety and Protection Act" (H.R. 5040) (Aug. 23, 2002).

[FN256]. An example of a local governmental control might be a town ordinance addressing the construction of structures in a flood zone. See Farnsworth v. Horrigan, No. CV 950373914S, 1999 WL 49393, at *1 (Conn. Super. Ct. Jan. 22, 1999) (concerning an allegation that a violation of a town ordinance related to building in a flood zone contributed to a building's water damage); see also Mondelli, 631 N.W.2d at 846 (concerning a homeowner who alleged violations of city building code caused mold contamination in structure).

[FN257]. See ASTM Standards, E 2112 Enhanced Exterior Building Installations, Standardization News, Dec. 2002, at 20 (developing a consensus standard for integration of external wall components to better ensure continuity of building envelope).

[FN258]. The paper in gypsum wallboard provides nourishment for mold such as Stachybotrys. See Dolnick, supra note 107, at 14.

[FN259]. A 2002 article cited research in the building materials industry: "He notes that the gypsum industry is working on developing new mold-resistant or moisture resistant gypsum and drywall products, but he doesn't see them coming out any time soon." See Tulacz, supra note 8, at 60.

[FN260]. See Guenther, supra note 144 (discussing the need to avoid using porous materials on air stream surfaces of plenums and ducts where moisture can support growth of fungi).

[FN261]. One area of inquiry is the moisture performance of various wall configurations. See U.S. Dep't of Commerce, Technology Administration, A Computer Analysis of Wall Constructions in the Moisture Control Handbook (NISTIR 5627) (May 1995).

[FN262]. See H.E. Barney Burroughs, Filtration: An Investment in IAQ, Heating, Piping, Air Conditioning, Aug. 1997, at 55 (stating source control is the preferred technique to achieve and maintain an acceptable indoor air environment).

[FN263]. B. Checket-Hanks, IAQ at the Rooftop Level, Air Conditioning, Heating & Refrigeration News, Jan. 28, 2002, at 9 (referencing study of effectiveness of Ultraviolet C ("UVC") lamps on a fungal contamination in Tulsa, Oklahoma office building). This discussion of active technologies is not intended to be exhaustive. Various systems designed to address indoor air pollutants include, but are not limited to, ozone purification, ozone generators, and duct encapsulation. Heady, supra note 72, at 1061-62.

[FN264]. See Burroughs, supra note 262, at 55.

[FN265]. See id. An example is the high energy particulate arrestor. This device was developed over fifty years ago as part of the Manhattan Project. It was designed to control very small particles. See id.

[FN266]. Heady, supra note 72, at 1061-62.

[FN267]. See Burroughs, supra note 262, at 55. However, this statement does not include filtration that is a component of ventilation systems. Tulis & Thomann, supra note 149, at 21. Some percentage of fungal spores are removed by these filtration systems. Id.

[FN268]. See Burroughs, supra note 262, at 56-57.

[FN269]. Id. (referencing mini plant filters, electric media, and active particle fabrics).